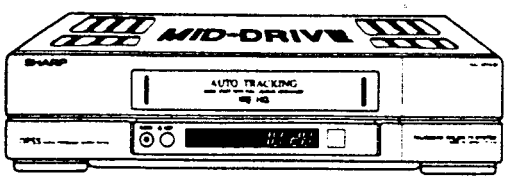
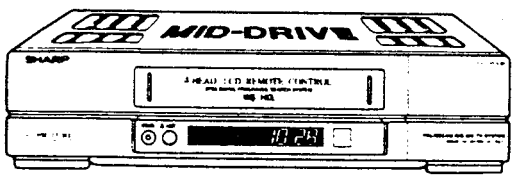
SHARP SERVICE MANUAL

S91i7VC-A33BP



VC-A33BP



VC-A63BP

VHS VIDEO CASSETTE RECORDER

VC-A33BP

MODELS

In the interests of user-safety (Required by safety regulation in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION

SPECIFICATIONS

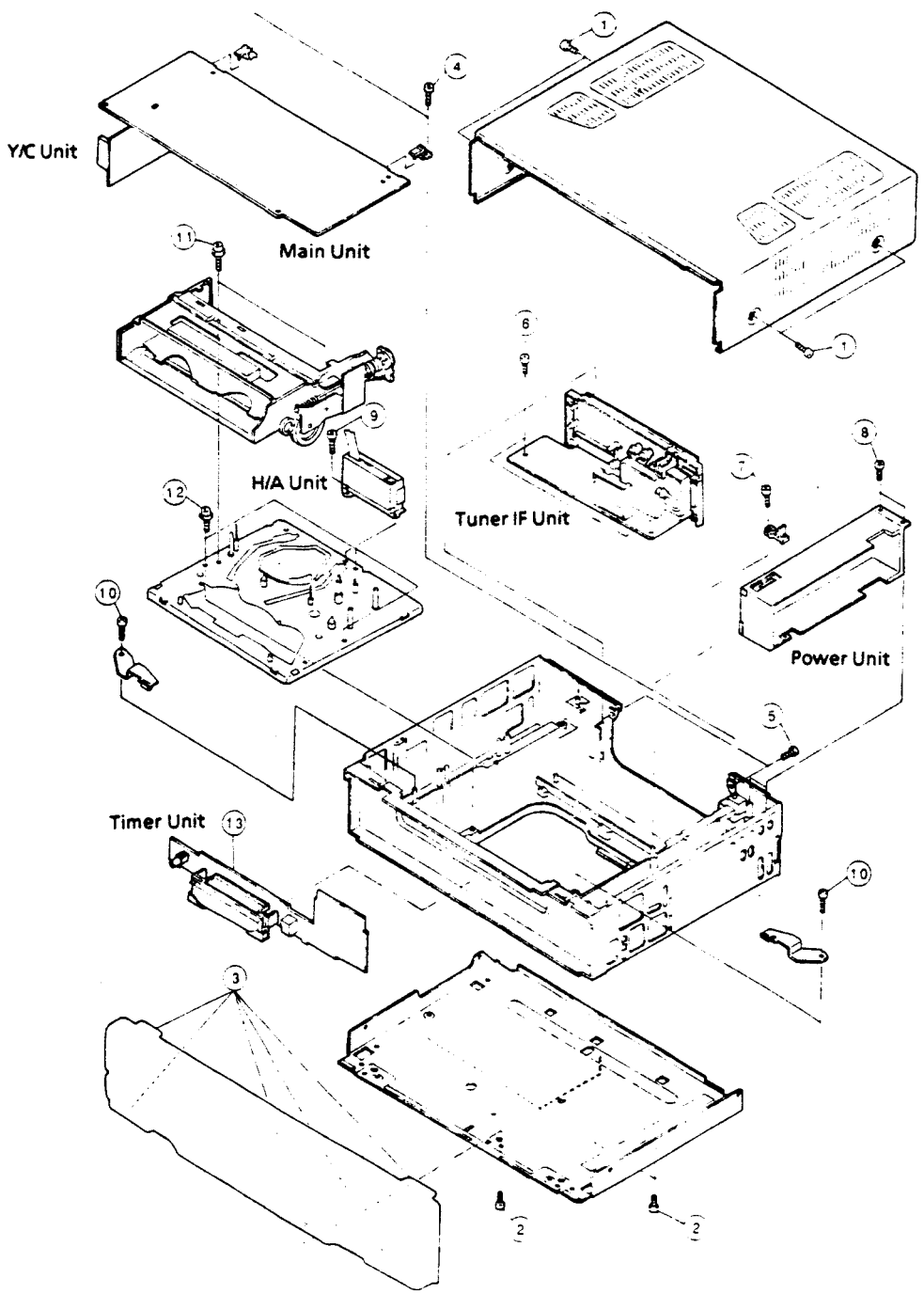
Format:	VHS PAL standard
Video recording system:	Two rotary head helical scan system
Video signal:	PAL/SECAM colour and B/G, D/K signals, 625 lines
Recording playing time:	4 hours max. with SHARP E - 240 tape (SP Mode)
:	8 hours max. with SHARP E - 240 tape (LP Mode; VC-A63BP)
Tape width:	12.7 mm
Tape speed:	23.39 mm/sec. (SP Mode), 11.70mm/sec (LP Mode; VC-A63BP)
Antenna:	75 ohm unbalanced
Receiving channel:	VHF Channel S1 - S20/E2 - E12, UHF Channel E21 - E69
RF converter output signal:	UHF Channel E30 - E39 (adjustable). Preset to E36 Channel
Power requirement:	AC 220V, 50 Hz
Power consumption:	Approx. 19W
Operating temperture:	5°C to 40°C
Storage temperature:	– 20°C to 60°C
Weight:	4.8 kg
Dimensions:	380 mm (W) x 325 mm (D) x 89 mm (H)
VIDEO	
Input:	1.0 Vp-p, 75 ohm
Output:	1.0 Vp-p, 75 ohm
AUDIO	0 dB = 0.775 Vrms
Input:	Line: – 8 dBs/ more than 47k ohm
Output:	Line: – 8 dBs/ less than 1k ohm
Accessories included:	Antenna 75 ohm coaxial connector cable (plug provided) Operation manual Infrared remote control AC Cord Battery Schematic Diagrams

As part of our policy of continuous improvement, we reserve the right to alter design and specifications without notice.

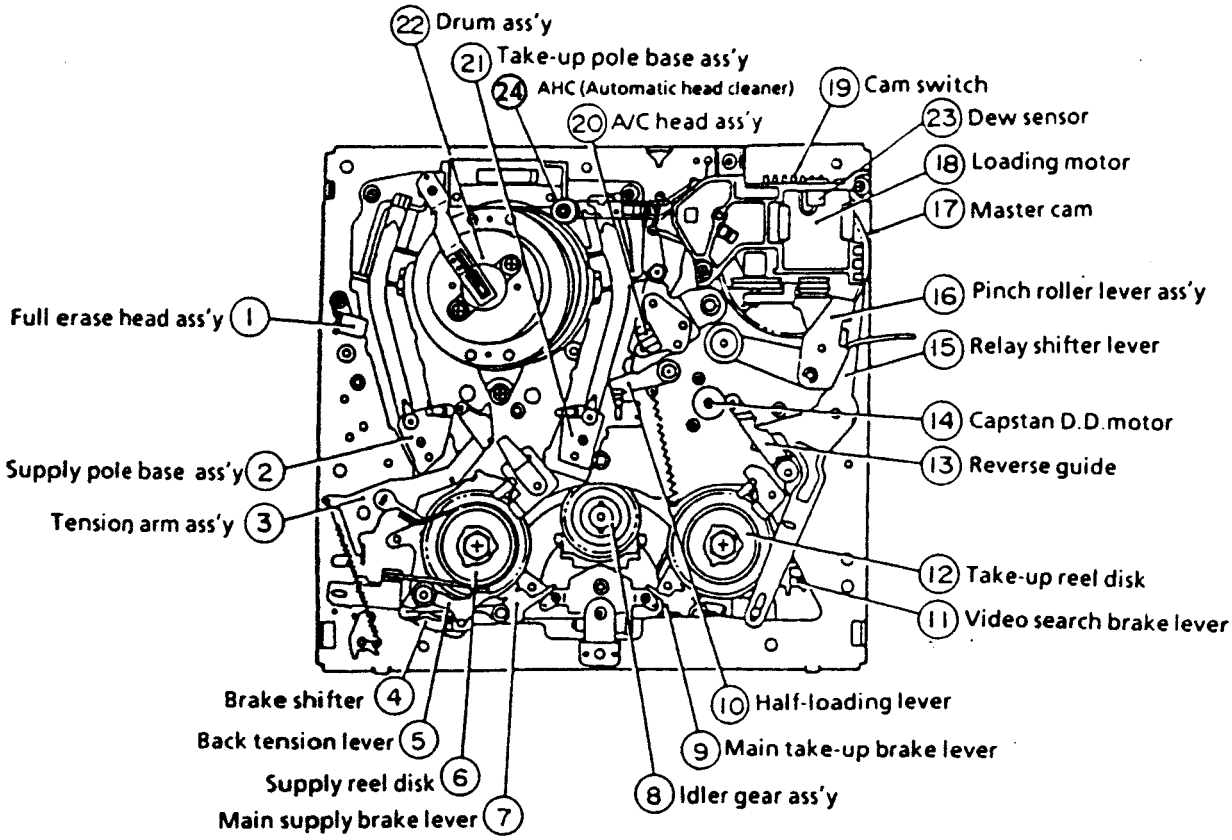
Note: The antenna must correspond to the new standard DIN 45325 (IEC 169 - 2) for combined VHF/UHF antenna with 75 ohm connector.

DISASSEMBLY AND REASSEMBLY

1. Remove 4 screws ① from the top cabinet, and remove the top cabinet by sliding it backward.
2. Remove 4 screws ② from the bottom plate, and remove the bottom plate by sliding it backward.
3. Remove 5 clips ③ from the upper and lower parts of front panel, respectively, and remove the front panel.
4. Remove 2 screws ④ and the clip from the main PWB holder.
5. Remove 2 screws ⑤ from the antenna terminal board.
6. Remove 2 screws ⑥ from the tuner IF PWB.
7. Remove 1 screw ⑦ from the power unit holder.
8. Remove 2 screws ⑧ from the power unit.
9. Remove 2 screws ⑨ from the head amp unit.
10. Remove 2 screws ⑩ from the cassette housing control assembly.
11. Remove 2 cassette housing control assembly mounting screws ⑪.
12. Remove 3 mechanism chassis mounting screws ⑫.
13. Remove 2 clips from the timer PWB ⑬.

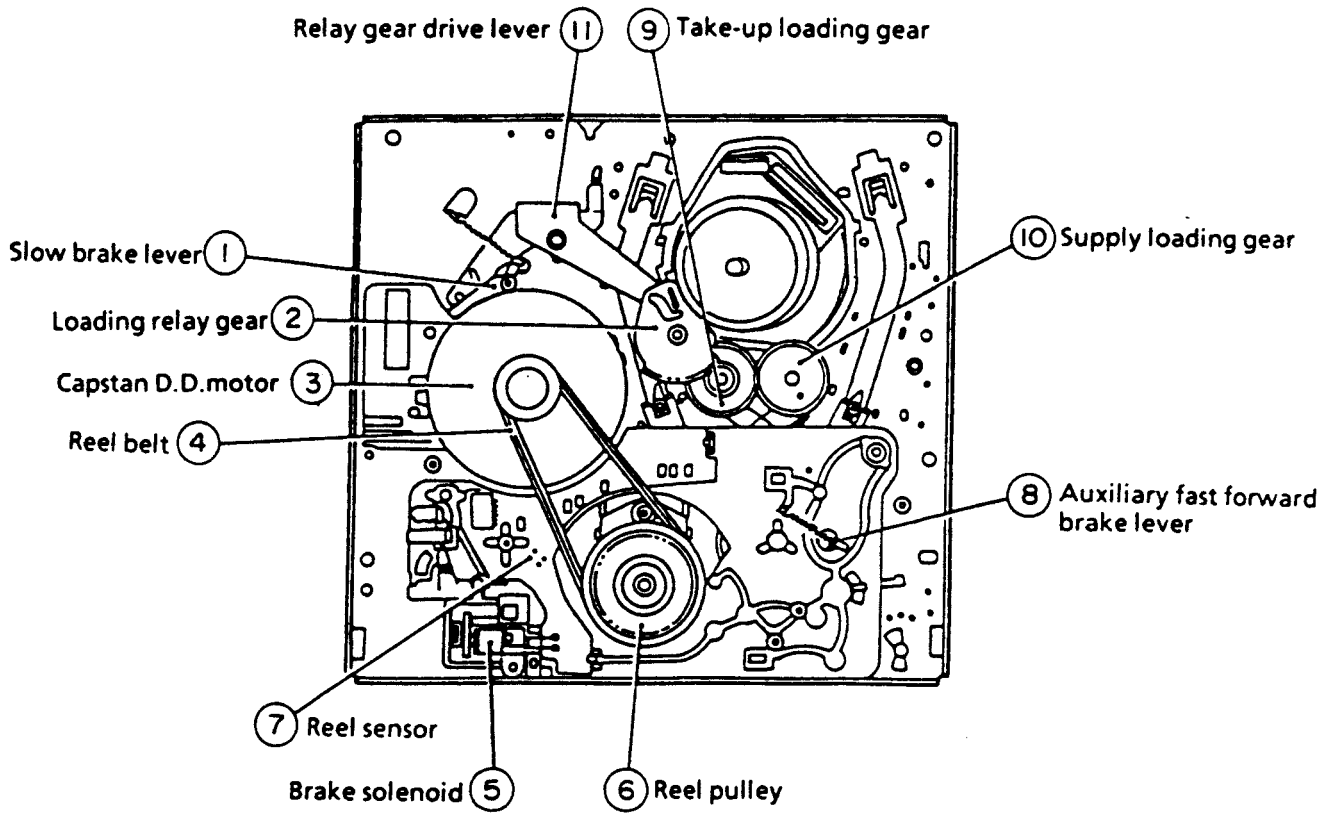


FUNCTION OF MAJOR MECHANICAL PARTS (TOP VIEW)


22 Drum ass'y
21 Take-up pole base ass'y
24 AHC (Automatic head cleaner)
20 A/C head ass'y
19 Cam switch
23 Dew sensor
18 Loading motor
17 Master cam
16 Pinch roller lever ass'y
15 Relay shifter lever
14 Capstan D.D.motor
13 Reverse guide
12 Take-up reel disk
11 Video search brake lever
10 Half-loading lever
9 Main take-up brake lever
8 Idler gear ass'y
Full erase head ass'y 1
Supply pole base ass'y 2
Tension arm ass'y 3
Brake shifter 4
Back tension lever 5
Supply reel disk 6
Main supply brake lever 7

No.	Function	No.	Function
1.	Full erase head ass'y Erase the whole records on the tape in the recording mode.	13.	Reverse guide Pulls out the tape in the video search rewind mode, and controls the tape drive train height with the upper and lower guides.
3.	Tension arm ass'y Detects the tension of tape while running, and brakes the supply reel disk via the tension band.	15.	Relay shifter lever Transmits the operation of the master cam to the brake shifter, and operates the reverse guide.
4.	Brake shifter Set the position of brake or the like in accordance with the modes such as stop and playback.	16.	Pinch roller lever ass'y Press-fits the tape to the capstan during tape running. The right protrusion switches the clutch of the cassette housing control assembly in "tape eject", and makes the mechanism eject the tape.
5.	Back tension lever Bakes the supply reel disk to a certain degree to prevent tape slackening during "half-loading", "loading" and "shifting from playback to video search rewind".	17.	Master cam Turns clockwise during loading, and counterclockwise during unloading, and moves the shifter or the like in accordance with each mode.
7.	Main supply brake lever Brakes the supply reel disk to prevent tape slackening when the unit is stopped in fast forward or rewind mode.	18.	Loading motor A motive power which drives the mechanism. It transmits the power to the master cam and cassette housing control assembly via the belt.
9.	Main take-up brake lever Brakes the take-up reel disk to prevent tape slackening when the unit is stopped in fast forward or rewind mode.	19.	Cam switch Rotates synchronously with the master cam, and detects the position of each mode by means of the internal switch.
10.	Half-loading lever Bring the tape in contact with the A/C head, putting it in half-loading state in the fast forward or rewind mode.	23.	Dew sensor An element which detects condensation inside the unit. This element is activated, when it senses condensation, to interrupt the mechanism.
11.	Video search brake lever It is in contact with the take-up reel disk normally, and brakes it to a certain degree. It applies larger brake in the video search rewind mode.		

FUNCTION OF MAJOR MECHANICAL PARTS (BOTTOM VIEW)



No.	Function	No.	Function
1.	Slow brake lever Gets in contact with the capstan D.D. motor linking to the master cam in the slow still mode, and brakes it to a certain degree.	7.	Reel sensor An element which sheds the light onto the reflection plate affixed to the bottom side of the reel disk, and detects the rotation of the reel disk through receiving the reflected light.
3.	Capstan D.D. motor A motive power which runs the tape. It transmits the power via the reel belt.	8.	Auxiliary fast forward brake lever Brakes the supply reel disk to a certain degree in the fast forward and rewind modes.
4.	Reel belt Transmits the power to run the tape to the reel pulley.	9.	Take-up loading gear Shifts the take-up pole base and guide roller via the loading relay gear, and applies the tape around the drum assembly, as well as transmits the power to the supply loading gear.
5.	Brake solenoid Adsorbs and holds the brake shifter in the fast forward and rewind modes, and releases it in the stop mode.	10.	Supply loading gear Shifts the supply pole base and guide roller via the take-up loading gear, and applies the tape around the drum assembly.
6.	Reel pulley Transmits the power of the capstan D.D. motor to the reel disk via the reel idler.	11.	Relay gear drive lever Transmits the movement of the master cam to the take-up loading gear via the loading relay gear.

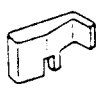
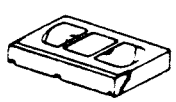
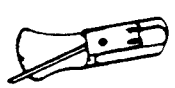
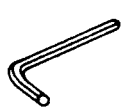
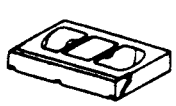
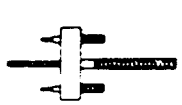
ADJUSTMENT, REPLACEMENT AND ASSEMBLY OF MECHANICAL UNITS

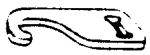
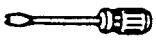
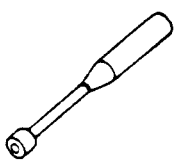
Here we will describe a relatively simple service work in the field, not referring to the more complicated repairs which would require the use of special equipment and tools (drum assembly replacement, for example).

We are sure that the easy-to-handle tools listed below would be more than handy for periodical maintenance to keep the machine in its original working condition.

TOOLS NECESSARY FOR ADJUSTING THE MECHANICAL UNITS

The following tools are required for proper service and satisfactory repair.

No.	Jig Item	Part No.	Code	Configuration	Remarks
1	Reel Disk Height Adjusting Jig	JiGRH0002	BR		These Jigs are used for checking and adjusting the reel disk height
2	Master Plane Jig	JiGMP0001	BY		
3	A/C Head Tilt Adjusting Jig	JiGACH-F18	BU		This Jig is used for setting the A/C head tilt.
4	Torque Gauge (90g)	JiGTG0090	CM		These Jigs are used for checking and adjusting the torque of take-up and supply reel disks.
	Torque Gauge (1.2 kg)	JiGTG1200	CN		
5	Gauge Head	JiGTH0006	AW		
6	Cassette Torque Meter	JiGVHT-063	CZ		This cassette torque meter is used for checking and adjusting the torque of take-up for measuring tape back tension.
7	Tension Gauge (300g)	JiGSG0300	BF		There are two gauges used for the tension measurements, 300 g and 2.0 kg.
	Tension Gauge (2.0kg)	JiGSG2000	BS		
8	Hex Wrench (0.9mm)	JiGHW0009	AE		These Jigs are used for loosening or tightening special hexagon type screws.
	Hex Wrench (1.2mm)	JiGHW0012	AE		
	Hex Wrench (1.5mm)	JiGHW0015	AE		
9	Alignment Tape (PAL)	VROCPSV	CK		These Tapes are especially used for electrical fine adjustment.
	Alignment Tape (PAL-LP)	VROUBZFS	BP		
10	Drum Replacing Jig	JiGDT-0001	BG		This is used for replacement of the VCR's upper drum.

No.	Jig Item	Part No.	Code	Configuration	Remarks
11	Tension Gauge Adapter	JiGADP003	BK		This Jig is used with the tension gauge. Rotary transformer clearance adjusting jig.
12	Special Bladed Screwdriver	JiGDRiVERH-4	AP		This Screwdriver is used for adjusting the guide roller height.
13	Tension Band and Plate Adjusting Jig	JiGDRiVER-6	BM		This Jig is used for adjusting the tension band and tension plate.
14	Torque Driver	JiGTD1200	CB		This is used to screw down resin-made parts: the specified torque is 5 kg.
15	Box Driver	JiGDRiVER110-7	AS		This Jig is used for height adjustment of the A/C head and X-position.
		JiGDRiVER110-4	AV		This Jig is used for height adjustment of the retaining guide.
16	Retaining Guide Height Adjusting Jig	JiGGH-F18	BU		This Jig is used for height adjustment of the retaining guide.
17	Reverse Guide Height Adjusting Jig	JiGRVGH-F18	BU		This Jig is used for height adjustment of the reverse guide.

MECHANICAL PARTS REQUIRING PERIODICAL INSPECTION

Use the following table as a guide to maintain the mechanical parts in good operating condition.

Parts \ Maintained	500 hrs.	1000 hrs.	1500 hrs.	2000 hrs.	3000 hrs.	Possible symptom encountered	Remarks
Guide roller ass'y	□	□	□	□	□	Lateral noises Head occasionally blocked	Abnormal rotation or significant vibration requires replacement.
Supply impedance roller	□	□	□	□	□		
Supply impedance roller (inner hole and shaft)		□		□	□		Clean with pure high quality isopropyl alcohol.
Supply impedance roller flange B	□	□	□	□	□		Clean tape contact part with the specified cleaning liquid.
Retaining guide	□	□	□	□	□		
Slant pole	□	□	□	□	□		
Video head	□	○□	□	○□	○□	Poor S/N ratio, no colour	Clean tape contact area with the specified cleaning liquid.
Full-erase head	□	□	□	□	□	Poor colour, beating	
A/C head	□	□	□	□	□	Sound too small or distorted	
Capstan D.D. Motor	□	□	□	□	○	No tape running, uneven colour	
Pinch roller	□	□	□	□	○	No tape running, tape slack	Clean rubber and rubber contact area with the specified cleaning liquid.
Reel belt		□		○	□	No tape running, tape slack, no fast forward/rewind motion	
Loading belt		□		○	□	Cassette not loaded or unloaded	
Cassette loading belt		□		○	□		
Tension band ass'y					○	Lateral image swing	
Loading Motor					○	Cassette not loaded or unloaded	
AHC (Automatic Head Cleaner)		○		○	○		Replace the roller of the cleaner when it wears down. Just change the AHC roller assembly for new one.
Reel block*						See the chart below.	
•See the table below for servicing the reel block parts.							
Supply/Take-up reel disks		□△		△○	□△	No tape running, tape slack	Clean with pure high quality isopropyl alcohol.
Video search brake lever				○			
Idler gear ass'y				○		No tape running	
Reel Pulley		□△		□○	□△		
Main supply/take-up brake levers				○		Tape slack	

NOTE: ○: Part replacement.
□: Cleaning (For cleaning, use a lint-free cloth dampened with pure isopropyl alcohol).
△: Oil refilling (The indicated point should be lubricated with high quality spindle oil every 1000 hrs).

If the reading is out of the specified value, clean or replace the part.

REMOVAL AND REASSEMBLY OF CASSETTE HOUSING CONTROL ASSEMBLY

- **Removal**

1. Set the cassette ejected condition in the cassette eject mode.
2. Unplug the recorder from the main source.
3. Follow the procedures below in the specified order.
   a) Remove the cassette loading belt ①.
   b) Disconnect the FFC (Full Flat Cable) ②.
   c) Remove the cassette housing installation screws ③.
   d) Slide and pull out the cassette housing control assembly ④ upward.

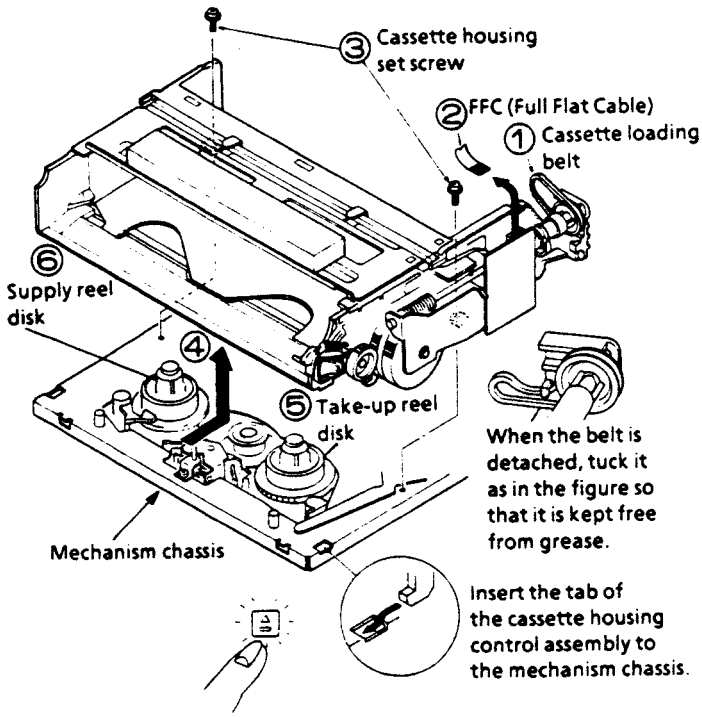

③ Cassette housing set screw
② FFC (Full Flat Cable)
① Cassette loading belt
⑥ Supply reel disk
④
⑤ Take-up reel disk
When the belt is detached, tuck it as in the figure so that it is kept free from grease.
Mechanism chassis
Insert the tab of the cassette housing control assembly to the mechanism chassis.

Figure 1-1.

- **Reassembly**

1. Before installation of the cassette housing control assembly, place the unit in the stop mode with the power on, then unplug the power cord. (The main body is placed in the eject mode.)
2. Follow the procedures for removal in the reverse order.

Notes:

1. Be sure to unplug the power cord in removal and reassembly.
2. Keep the cassette loading belt free from grease. In case of its adhesion, clean the belt.
3. In using a magnet screw driver, be sure to keep it away from the A/C head, FE (Full Erase) head, or the drum.
4. In removal and reassembly, take care not to hit the cassette housing control assembly or tools against the guide pin, drum, or the like thereabout.
5. Place the unit in the eject mode in removal or reassembly of the cassette housing control assembly.
6. Load the cassette once onto the cassette housing control assembly after reassembly. (If the cassette housing control assembly normally operates after this, the phases of mechanism and the cassette controller are accurately adjusted after ejection.)

MECHANICAL OPERATION CHECK WITHOUT CASSETTE

When power is on, the general operations of the mechanism can be checked without a cassette. Note the following points.

1. Check video search rewind and rewind, rotating the take-up reel disk ⑤ by hand (in either normal or reverse direction). If it is not rotated, the reel sensor works to shift the mechanism to the eject mode.
2. When the stop button is pressed, the mechanism does not stop at a normal stop position. It shifts to the eject mode and stops.
3. When the stop button is pressed in the playback, video search rewind, and video search forward modes, the supply reel disk ⑥ keeps on rotating for several seconds for elimination of tape slack in the course of shifting to the eject mode. In such a case, rotate the take-up reel disk ⑤ somewhat by hand, and the supply reel disk ⑥ stops, which can reduce the working time.

REPLACEMENT OF WORM WHEEL ASSEMBLY

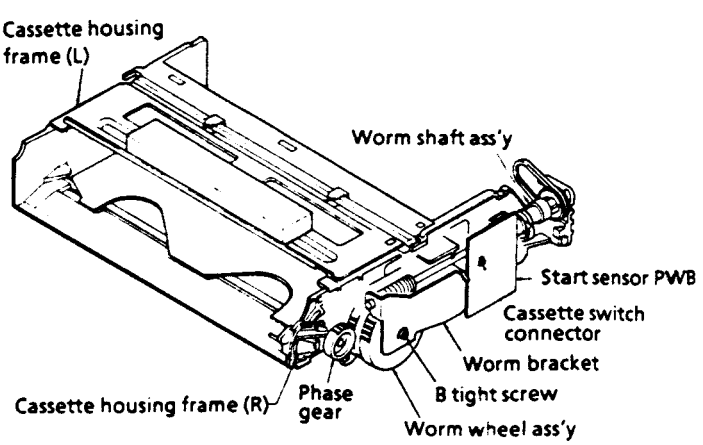


Figure 1-2.

- **Removal**

1. Unsolder the cassette switch connectors (No.16, 17) from the start sensor PWB.

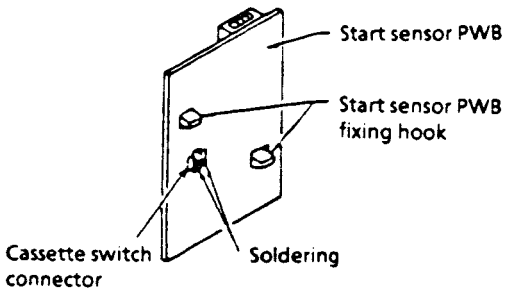


Figure 1-3.

2. Lift the start sensor PWB pressing the two start sensor PWB fixing hooks inward.

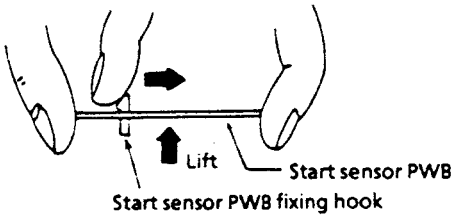


Figure 1-4.

3. Unscrew one B tight screw to detach the worm bracket.
Note:
The worm shaft bearing can easily come out of position. So be careful not to lose it.

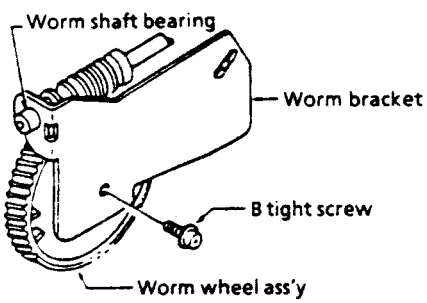


Figure 1-5.

4. Remove the worm shaft assembly, pulley, and cassette loading belt all from the cassette housing frame (R).

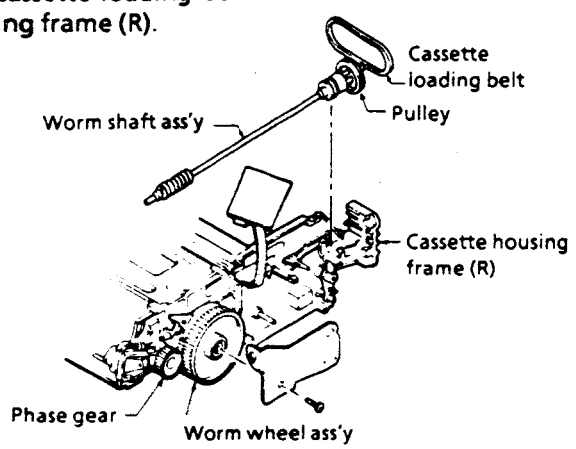


Figure 1-6.

5. Place the slider pin just above the worm wheel assembly (Figure 1-7). (The retainer of the slider is locked at two positions. So unlock it as in the Figure 1-8.)
6. Pull out the worm wheel assembly toward you pressing the switch lever upward. (Figure 1-7)

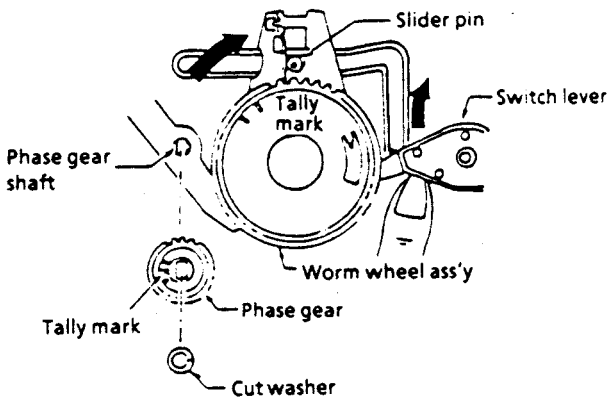


Figure 1-7.

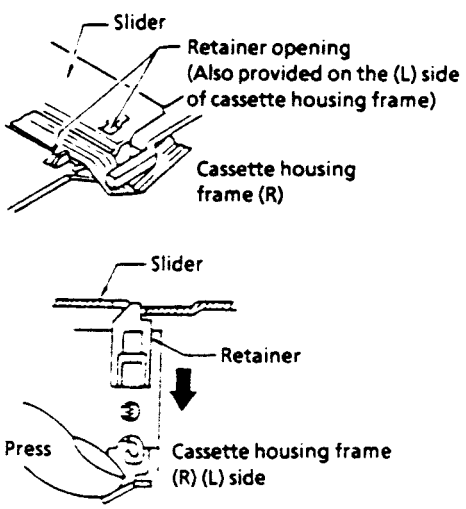


Figure 1-8.

- **Reassembly**

1. Turn the phase gear clockwise until the slider comes to a halt in the cassette insertion direction. (See the Figure 1-9.)
2. Insert the set up worm wheel gear assembly into the cassette housing frame (R), matching the mark on the phase gear with the mark on the worm wheel gear. Detach the cut washer on the phase gear assembly and the phase gear for easier installation of worm wheel assembly.
Note:
Make sure that the slider pin is in the groove of the drive gear arm.

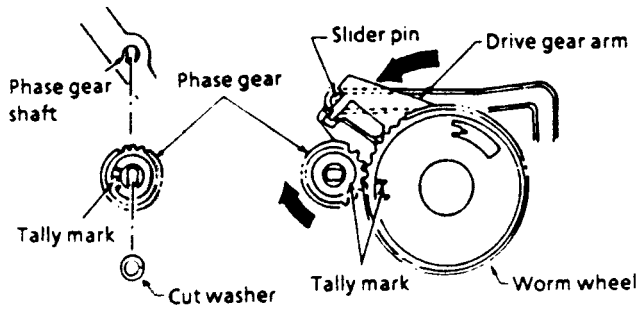


Figure 1-9.

3. Install the pulley and the cassette loading belt on the worm shaft assembly. Couple the clutch to the clutch lever. And mount them together in the cassette housing frame (R).
   Note:
   Keep in mind that the clutch switching lever should be in the correct position. The mechanism might malfunction if the lever is slightly out of position. (See page 12.)

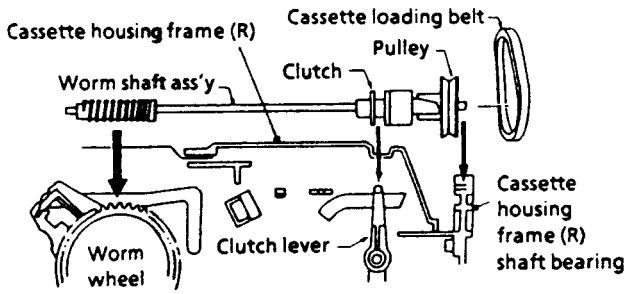


Figure 1-10.

4. Attach the worm bracket to the worm shaft assembly. Place them onto the boss on the cassette housing frame (R).
   Note:
   Insert ① before screwing into ② and ③.

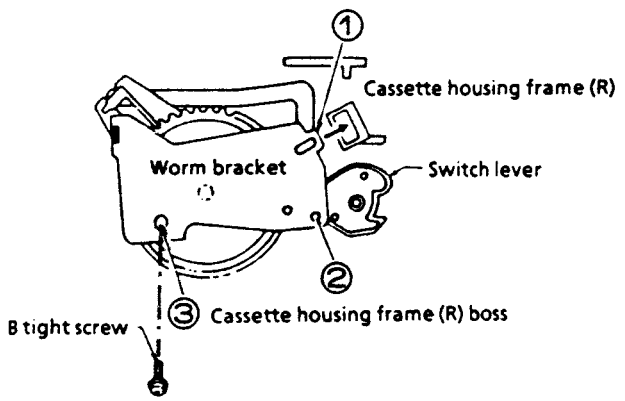
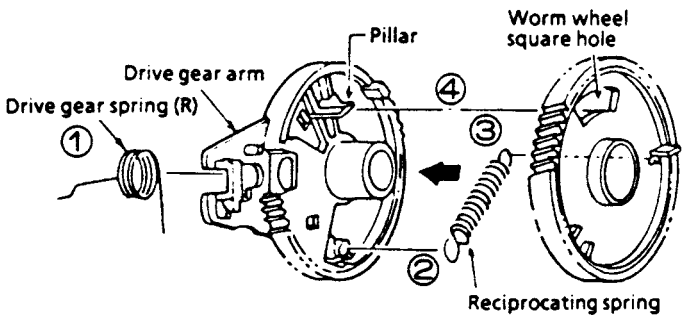


Figure 1-11.

5. Tighten one B tight screw.
   Note:
   Do not overtighten the B tight screw (no more than 5.0 ± 0.5 kg.cm), because the lower threads of the screw hole at the resin-made boss can be broken.
6. Place the start sensor PWB on the cassette housing frame (R).
   Note:
   Check that the switch connectors (No.16, 17) are in the cassette switch mounting hole.
7. Finally resolder the cassette switch connector to the start sensor PWB.

REASSEMBLY OF DRIVE GEAR



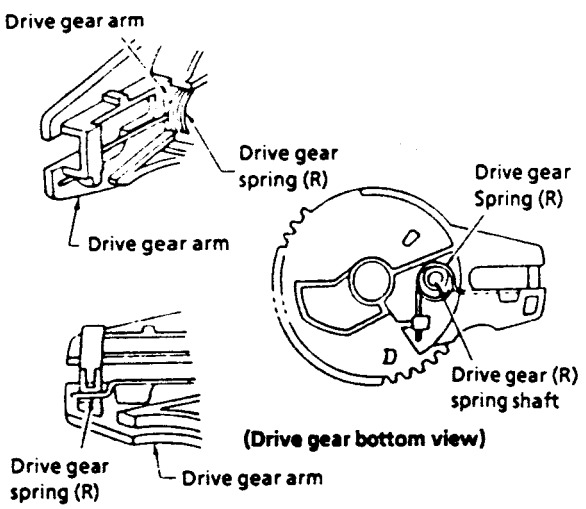


Figure 1-12.

1. Pass the tip of the drive gear spring (R) ① through the square hole of the drive gear (R) to hook the spring in position.
2. Hook one end ② of the reciprocating spring to the catch of the drive gear (R).
3. Hook the other end ③ of the reciprocating spring to the catch of the worm wheel.
4. Insert the pillar ④ of the drive gear (R) into the square hole of the worm wheel. Turn the worm wheel somewhat counterclockwise for insertion of the worm wheel to the drive gear (R), because the reciprocating spring is at work.

REPLACEMENT OF CASSETTE LOADING BELT

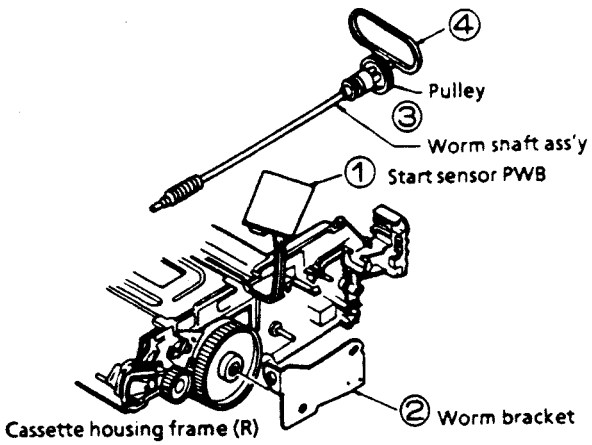


Figure 1-13.

1. Remove the start sensor PWB ① and worm bracket ② from the cassette housing frame (R).
2. Remove the worm shaft assembly ③.
3. Replace the cassette loading belt ④ with a new one.

Notes:

1. Do not overtighten the B tight screw which holds the worm bracket in position. The specified torque is 5.0 ± 0.5 kg.cm.
2. Make sure that the cassette loading belt is free from grease. If stained with grease, clean the belt with the cleaning liquid.
3. Perform checking of the clutch switch lever for proper action.

CHECKING THE CLUTCH SWITCH LEVER

- **Checking**

  Place the mechanism in the cassette eject mode when removing and attaching the cassette housing from and to the mechanism chassis.

  Make sure enough that each part in the cassette housing such as the clutch switch lever is in position. If not, it causes malfunction.

  Note:

  Figure 1-14 shows the position of each part in the cassette eject mode.

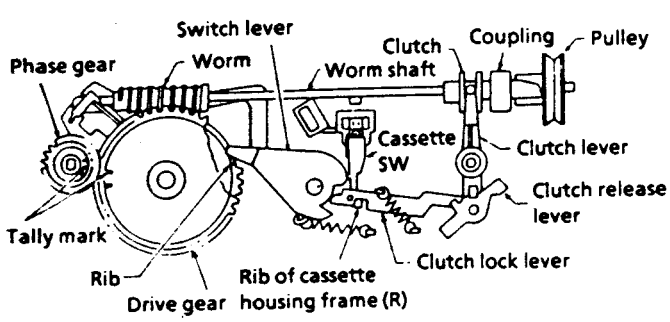
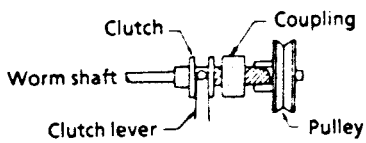


Figure 1-14.

1. First make sure that the tip of the switch lever is held at the rib of the drive gear (R).
2. Check that the rib of the cassette housing frame (R) and the concavity of the clutch lock lever are engaged.
3. Finally be sure that the relationship between the clutch lever and the clutch, as well as between the clutch and the pulley, are correct as in the Figure 1-15.



Check that the clutch is engaged with the pulley through the coupling.

Figure 1-15.

- **Resetting**

  Take the following steps to reset the clutch if it is unlocked or if the switch lever and the clutch lock lever are unlocked.

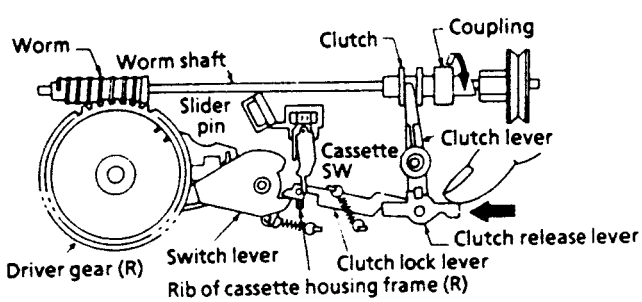


Figure 1-16.

1. Shift the slider by turning the coupling in the arrow direction (clockwise) until the slider pin is at the bottom of the slider groove as shown in the Figure 1-16. (The loading mode)

   Note:

   Note that the slider is equipped with a lock mechanism. Unlock the locks on cassette housing frames (L) and (R) side before shifting the slider.
2. When the position is set as shown in the Figure 1-16, push the clutch release lever in the direction of the arrow by hand until the clutch lock lever becomes tightly locked by the rib of the cassette housing frame (R).
3. Then turn the coupling counterclockwise until the slider reaches the cassette insertion opening and the reciprocating spring is activated.

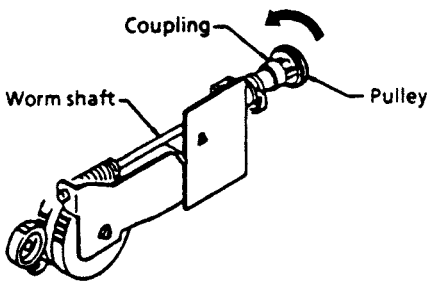
   Note:

   There is no need to unlock the slider when shifting the slider to the cassette insertion opening. Just keep shifting the slider.

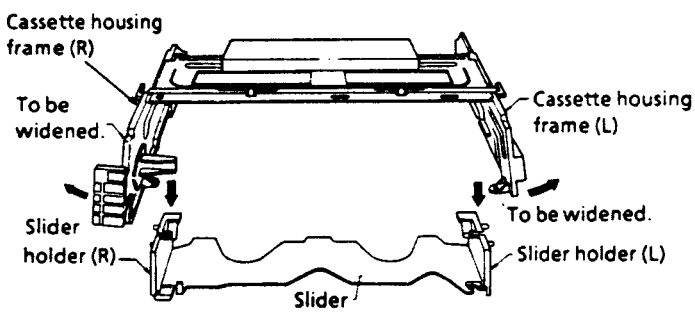
REPLACEMENT OF LOCK RELEASE LEVER

- **Removal**

1. Place the slider in the cassette down position. (Turn the coupling on the worm shaft clockwise until the slider is in the cassette down position.)
   Note:
   Before shifting, unlock the slider.
2. Slightly widen the cassette housing frames (R) and (L) to unhook the slider holders (R) and (L) of the slider assembly off the grooves of the cassette housing frames.



(a)



(b)

Figure 1-17.

3. Lift the slider holder (R) upward about 2mm off the slider by pressing two catches with a thin tip screw driver. Take care not to damage the catches.

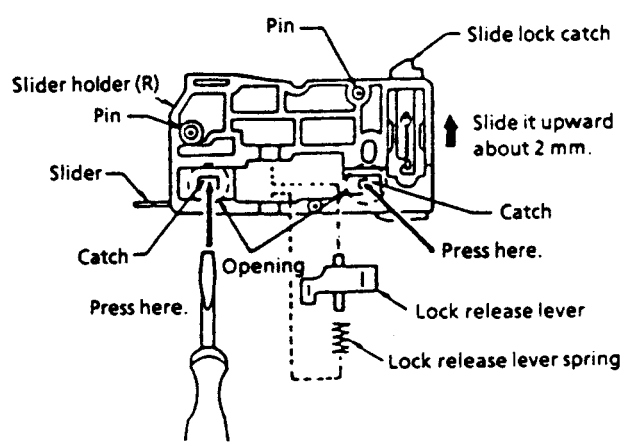


Figure 1-18.

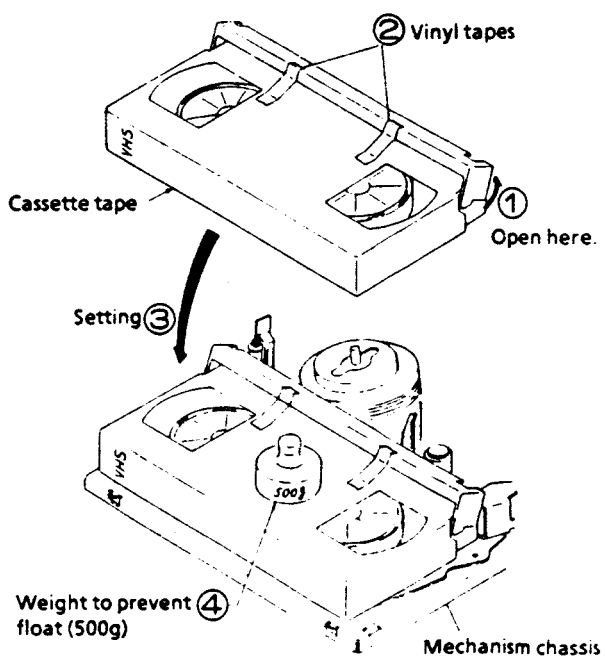
4. Remove the lock release lever from the slider holder (R)

- **Reassembly**

1. Follow the steps for removal in the reverse order. (See Figures 1-17 and 1-18.)
2. Attach the lock release lever to the slider holder (R).
3. Slide the slider holder (R) downward so that the two catches of the slider holder (R) fit the openings of the slider.
4. Slightly widen the cassette housing frames, and set the pins of slider holders (R) and (L) into the grooves of the cassette housing frames.
   Note:
   Check if the pins of the slider holders (R) and (L) fit the grooves of the cassette housing frames, and if the drive gear arm is sufficiently engaged with the slider holders.
5. Turn the coupling counterclockwise until the slider is at the cassette insertion opening.

TO RUN A TAPE WITHOUT THE CASSETTE HOUSING CONTROL ASSEMBLY

1. Plug in the power cord.
2. Turn on the power switch.
3. Open the lid ① of a cassette tape by hand.
4. Hold the lid with two pieces of vinyl tape ②.
5. Set the cassette tape in the mechanism chassis.
6. Weight the cassette tape with a weight ④ to prevent floating.
7. Perform running test.



Note:
The weight should not be more than 500 g.

Figure 1-19.

REPLACEMENT AND HEIGHT CHECKING AND ADJUSTMENT OF REEL DISKS

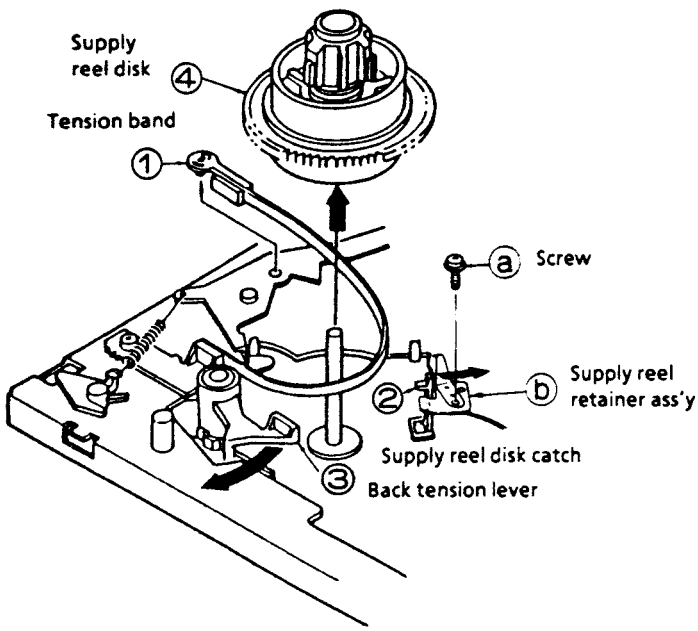
1. Remove the cassette housing control assembly.
2. Set the mechanism in the playback mode with no cassette tape in place. Unplug the power cord.
3. Set the idler gear in the center (neutral).

- **Removal (Supply reel disk)**

1. Remove the tension band ①. (Take care not to deform it.)
2. Unscrew the screw ⓐ and remove the supply reel retainer assembly ⓑ.
3. Release the supply reel disk catch ❷ and back tension lever ❸.
4. Pull the supply reel disk ❹ upward.

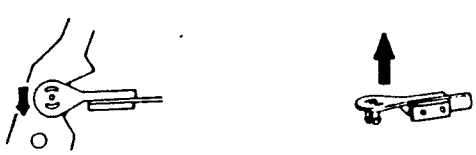
Notes :

1. Take care not to deform the tension band.
2. Check and adjust the tension pole position. (See page 19.)
3. Be careful not to damage the gear and the idler gear on the supply reel disk.
4. Press the tension band in the direction of the arrow for removal (See Figure 1-20(b)).



(a)

Note:
When the tension band is pressed in the direction of the arrow for removal, the catch is hard to be deformed.



(b)

Figure 1-20.

- **Removal (Take-up reel disk)**

1. Unscrew the screw ⓒ and remove the take-up reel retainer.
2. Release the take-up reel disk catch ①.
3. Pull the take-up reel disk ❷ upward.

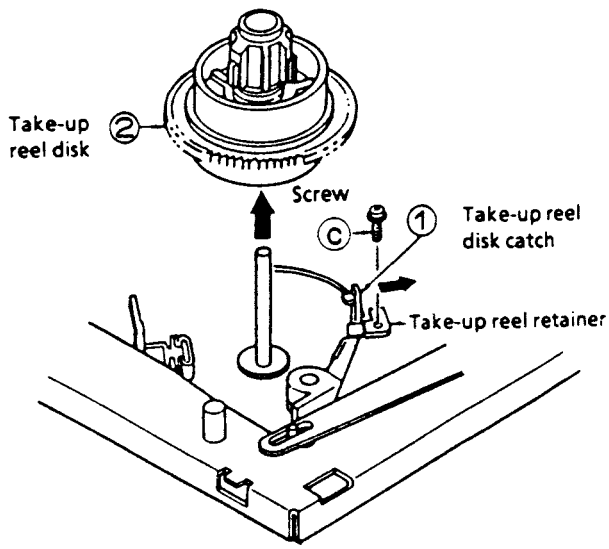


Figure 1-21.

- **Reassembly (Supply reel disk)**

1. Clean the reel disk shaft ① and apply oil to it.
2. Release the supply reel disk catch ❷ and back tension lever ❸.
3. Install a new supply reel disk ❹ onto the shaft.
4. Replace the tension band ❺ around the supply reel disk, and insert it to the hole of the tension arm.
5. Replace the supply reel retainer assembly ⓑ in place, and tighten up the screw ⓐ.

Notes :

1. Take enough care not to deform the tension band during installation of the supply reel disk.
2. Be careful not to damage the supply reel disk gear, back tension lever, supply reel disk catch, or the like with tools.

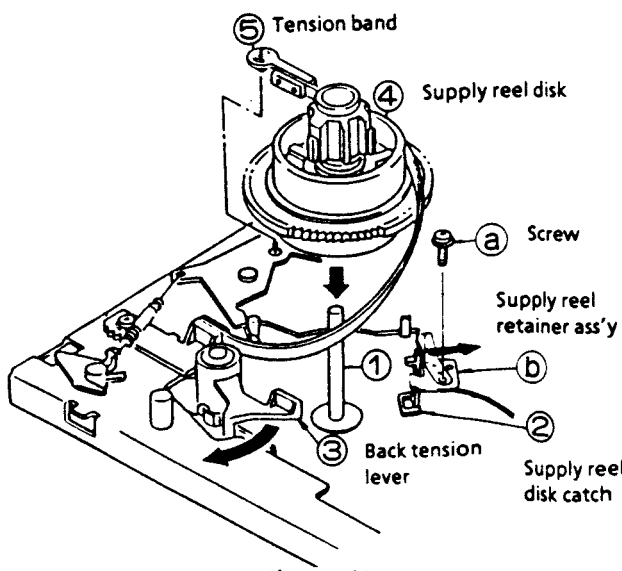


Figure 1-22.

- **Reassembly (Take-up reel disk)**

1. Clean the reel disk shaft ① and apply oil to it.
2. Release the take-up reel catch ② and video search brake lever ③.
3. Install a new take-up reel disk ④ onto the shaft.
4. Replace the take-up reel retainer ⑤ in position and tighten up the screw ⓒ.

Note :
Take care not to damage the video search brake lever.

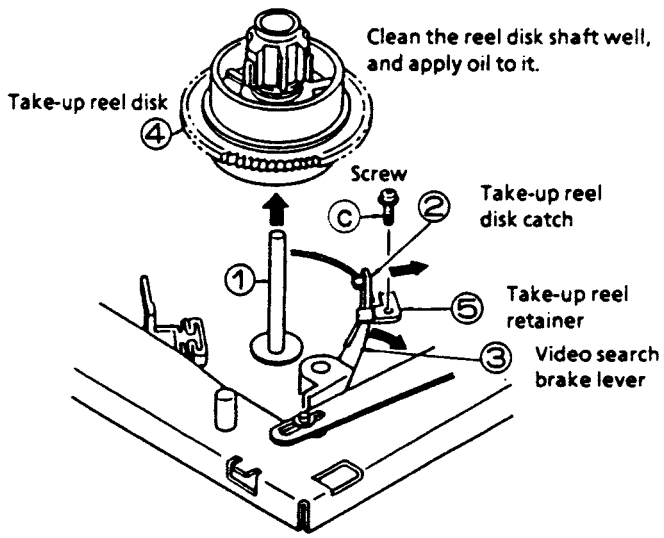


Figure 1-23.

* After reassembly, check the video search rewind back tension (see page 18), and check the brake torque (see page 20).

- **Height checking and adjustment**

Note:
Place the master plane onto the mechanism unit, taking care not to hit the drum (see Figure 1-24).

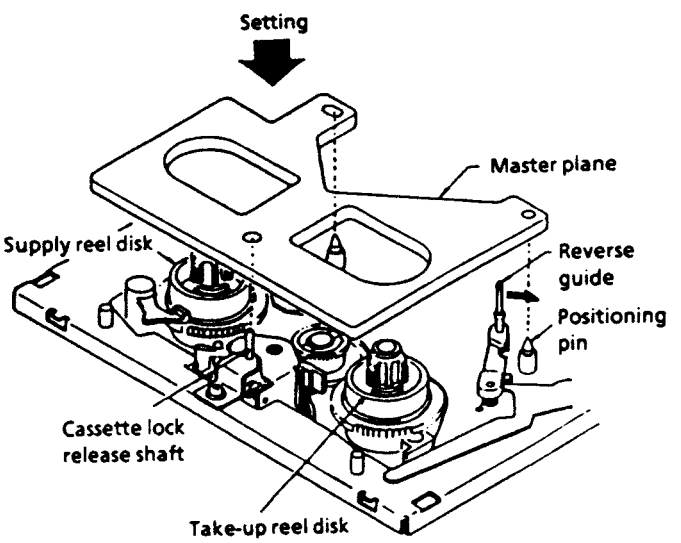


Figure 1-24.

1. For height adjustment, press the reel disk with a finger, and turn it right and left with a screwdriver (see Figure 1-26 (a)).

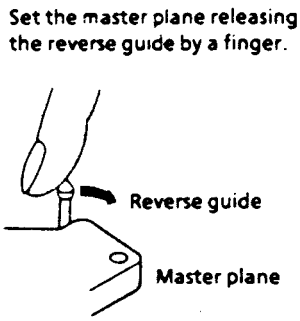
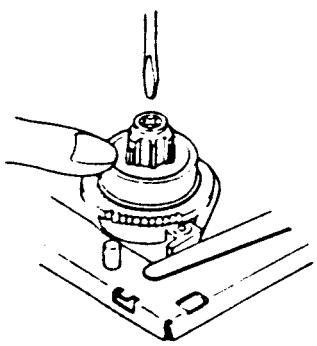


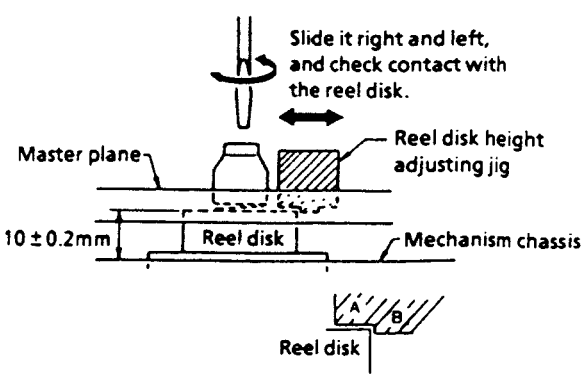
Figure 1-25.

2. Check that the reel disk is lower than part A but higher than part B. If the height is not correct, adjust the height adjusting screw (see Figure 1-26 (b)).

Note :
Whenever replacing the reel disk, perform the height checking and adjustment.



(a)



(b)

Figure 1-26.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN FAST FORWARD MODE

- **Remove the cassette housing control assembly.**
- **Setting**

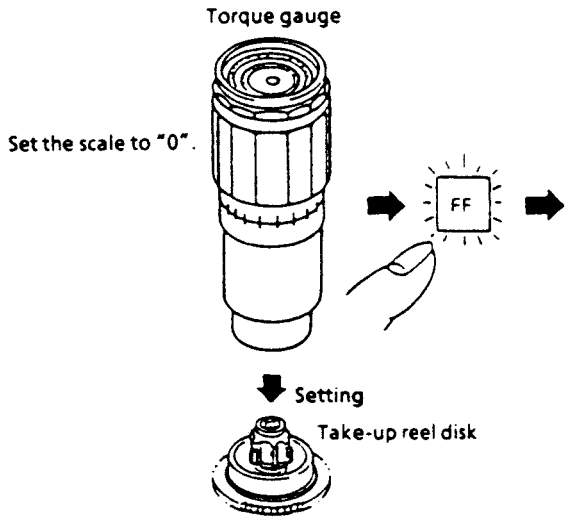


Figure 1-27.

- **Checking**

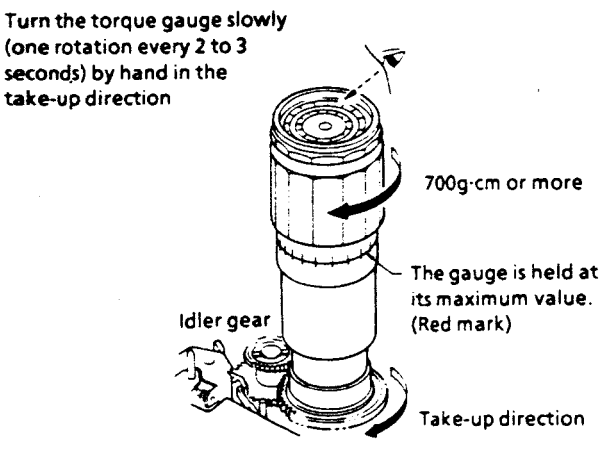

Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by hand in the take-up direction
700g-cm or more
The gauge is held at its maximum value. (Red mark)
Idler gear
Take-up direction

Figure 1-28.

- **Adjustment**

1. If the take-up torque is outside the range, clean the capstan D.D. motor pulley, reel belt and reel pulley with cleaning liquid, then recheck the torque.
2. If the take-up torque is still out of range, replace the reel belt.

Notes :

1. Hold down the torque gauge so that it may not fly off.
2. When checking the take-up torque, do not keep the reel disk locked for a longer time.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN REWIND MODE

- **Remove the cassette housing control assembly.**
- **Setting**

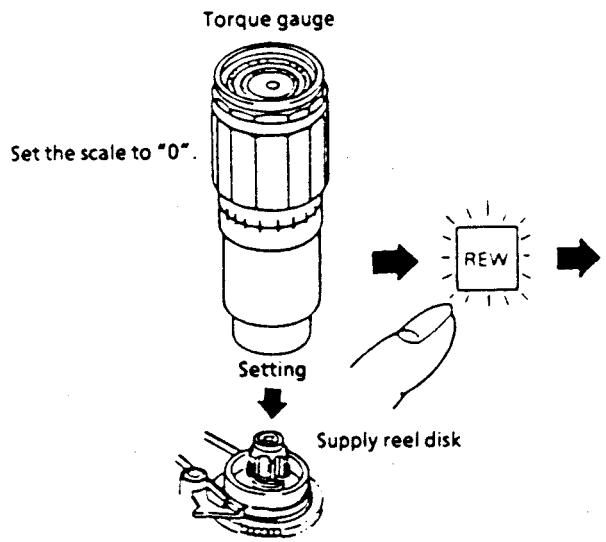


Figure 1-29.

- **Checking**

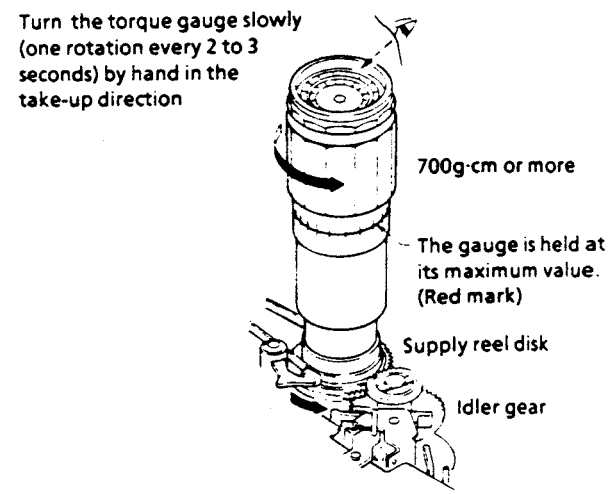

Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by hand in the take-up direction
700g-cm or more
The gauge is held at its maximum value. (Red mark)
Supply reel disk
Idler gear

Figure 1-30.

- **Adjustment**

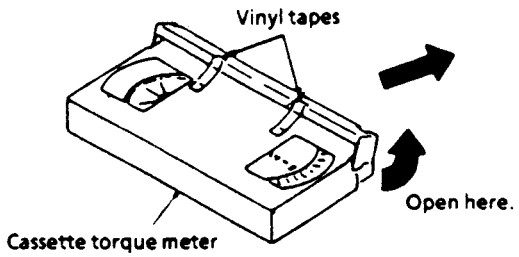
1. If the take-up torque is outside the range, clean the capstan D.D. motor pulley, reel belt and reel pulley with cleaning liquid, then recheck the torque.
2. If the take-up torque is still out of range, replace the reel belt.

Notes :

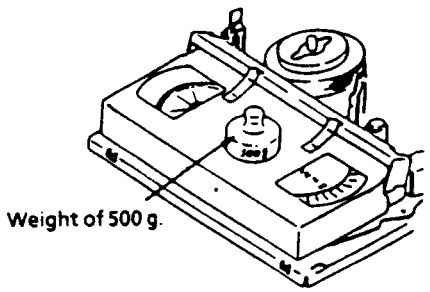
1. Hold down the torque gauge so that it may not fly off.
2. When checking the take-up torque, do not keep the reel disk locked for a longer time.

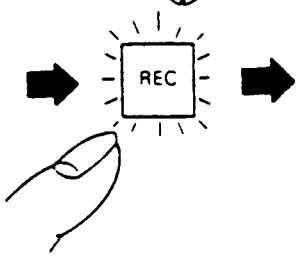
CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN PLAYBACK MODE

1. Remove the cassette housing control assembly.
2. Open the lid of the cassette torque meter, and hold it with two pieces of vinyl tape.



Load a cassette torque meter into the unit.





Set value SP (or LP) 95 ± 30g·cm

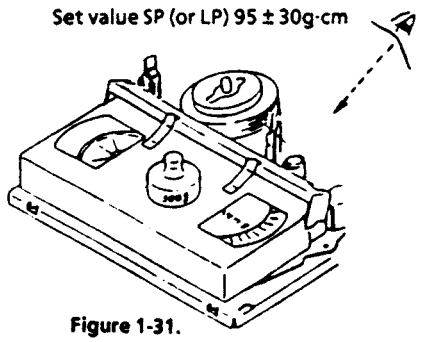


Figure 1-31.

- **Checking**

1. Check that the torque is in the range of 95 ± 30 g·cm.
2. The torque fluctuates due to the rotational deviation of the reel drive unit. Use the center of the fluctuation as the value.
3. Place the unit in the SP (or LP) record mode, and check that the take-up torque is within the range.

- **Adjustment**

If the take-up torque in the playback mode is outside the range, replace the take-up reel disk.

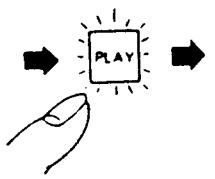
Note :

Weight the cassette torque meter to prevent floating.

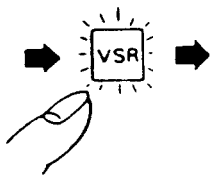
CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN VIDEO SEARCH REWIND MODE

- **Remove the cassette housing control assembly.**

- **Checking**



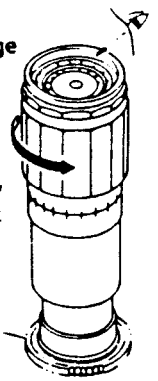
Push the play button to place the unit in the playback mode.



Push the video search rewind button to place the unit in the video search rewind mode.

Torque gauge

Place the torque gauge on the supply reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within the set value 170 ± 40 g·cm



Supply reel disk

Figure 1-32.

Note:

Set the torque gauge securely on the supply reel disk. If it is not secure, the measurement will be incorrect.

- **Adjustment**

If the take-up torque in video search rewind mode is outside the range, replace the supply reel disk.

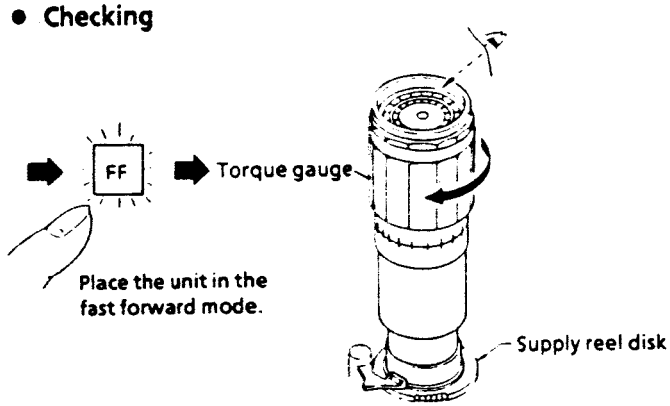
Note :

The torque fluctuates due to the rotational deviation of the supply reel disk. Use the center of the fluctuation at the value.

CHECKING THE FAST FORWARD BACK TENSION

- **Remove the cassette housing control assembly.**

- **Checking**



Place the torque gauge on the supply reel disk, and turn it clockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within 15 ± 5 g·cm

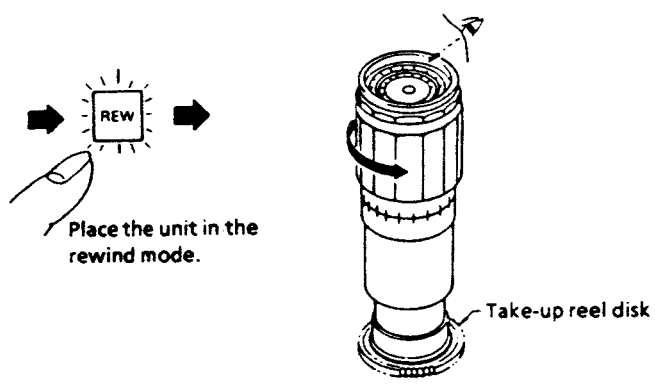
Figure 1-33.

Note :
Set the torque gauge securely on the supply reel disk. If the torque gauge is not securely set on the reel disk, measurement will be incorrect.

CHECKING THE REWIND BACK TENSION

- **Remove the cassette housing control assembly.**

- **Checking**



Place the torque gauge on the take-up reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within 15 ± 5 g·cm.

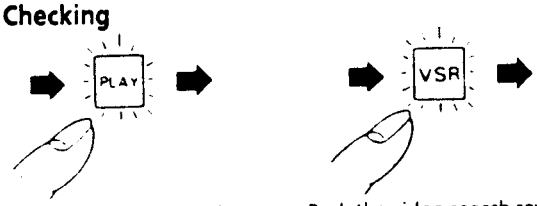
Figure 1-34.

Note :
Set the torque gauge securely on the take-up reel disk. If it is not secure, the measurement will be incorrect.

CHECKING THE VIDEO SEARCH REWIND BACK TENSION

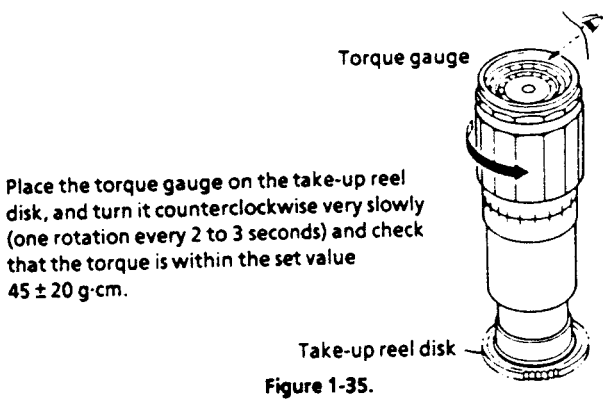
- **Remove the cassette housing control assembly.**

- **Checking**



Push the play button to place the unit in the playback mode.

Push the video search rewind button to place the unit in the video search rewind mode.



Place the torque gauge on the take-up reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within the set value 45 ± 20 g·cm.

Figure 1-35.

Note :
Set the torque gauge securely on the take-up reel disk. If it is not secure, the measurement will be incorrect.

CHECKING THE PINCH ROLLER PRESSURE

- **Remove the cassette housing control assembly.**

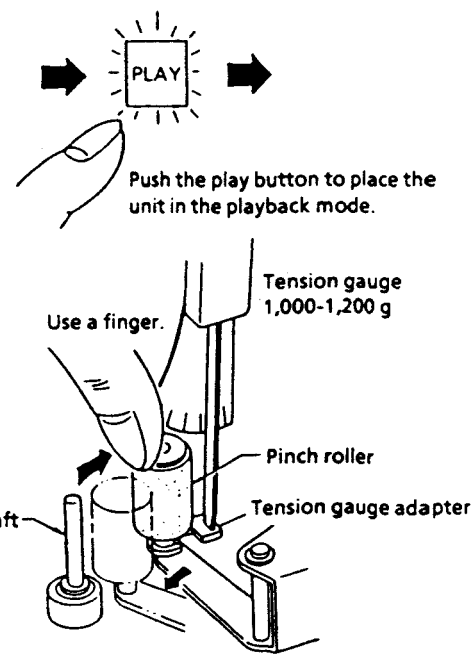


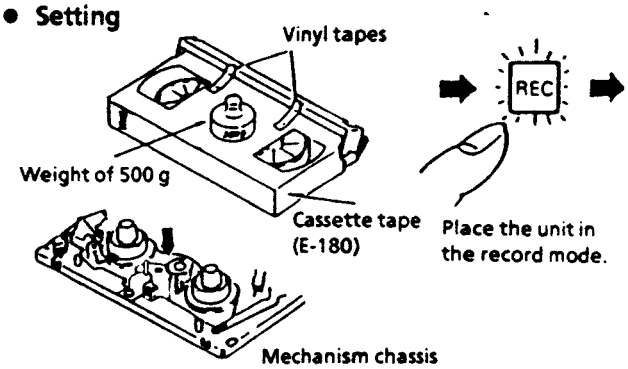
Figure 1-36.

1. Detach the pinch roller from the capstan shaft.
2. Set the tension gauge by hooking the tension gauge adapter onto the pinch roller shaft.
3. Gradually release the pressure to allow the pinch roller to touch the capstan shaft. When the pinch roller just touches the capstan shaft, read the indication on the gauge.
4. Check that the reading of the tension gauge is in the range of 1000 to 1200 g.

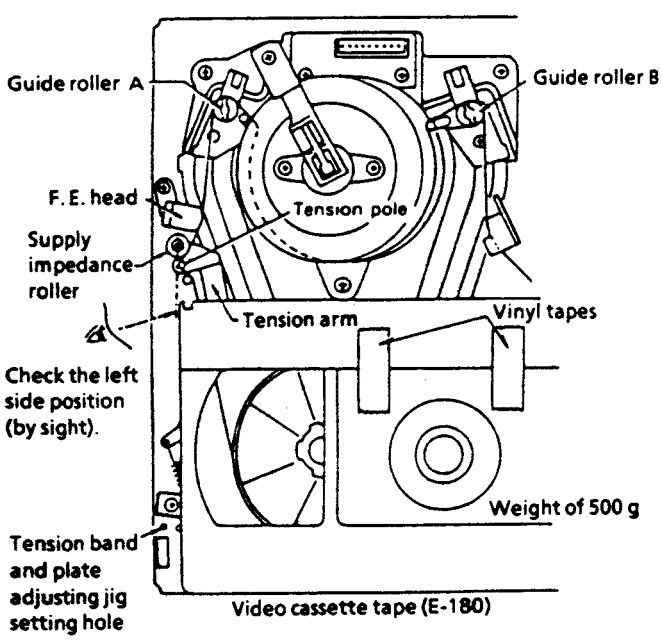
CHECKING AND ADJUSTMENT OF TENSION POLE POSITION

- **Remove the cassette housing control assembly.**

- **Setting**



(a)



(b)

Figure 1-37.

- **Checking**

1. The guide rollers (A, B) operate to bring the tape outside the cassette tape and simultaneously the tension pole moves to the left, loading the tape. At that time (loading completed), check the position of the tension pole.
2. At the beginning of the tape (E-180), check that the tension pole's left side is aligned with the supply impedance roller's center by sight.
3. Check that the end of the tape is neither curled against the flange of the supply impedance roller nor over it.
4. During the video search rewind mode with no cassette tape in place, check that the supply reel disk is free from the tension band.

- **Position adjustment (record mode)**

When the tension pole is at the right of the supply impedance roller's center:

Untighten the tightening screw, and shift the tension band adjustment bracket in the direction of the arrow using a tension band and plate adjusting jig until it is in the set value range (center). Then secure it with the tightening screw.

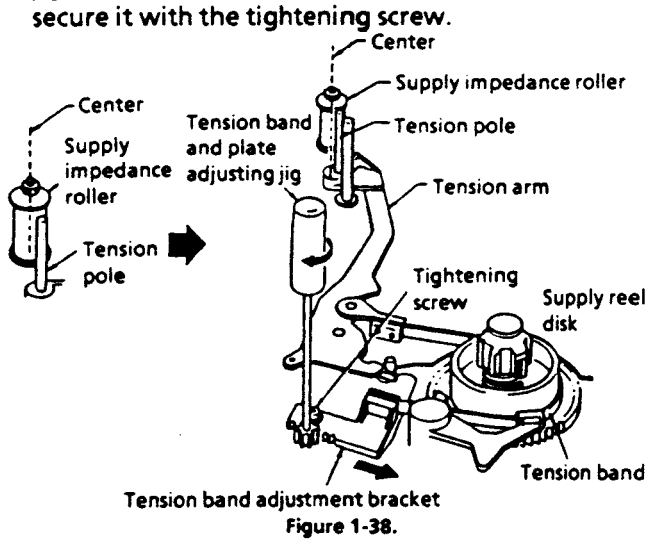


Figure 1-38.

- **Position adjustment (record mode)**

When the tension pole is at the left of the supply impedance roller's center:

Untighten the tightening screw, and shift the tension band adjustment bracket in the direction of the arrow using a tension band and plate adjusting jig until it is in the set value range (center). Then secure it with the tightening screw.

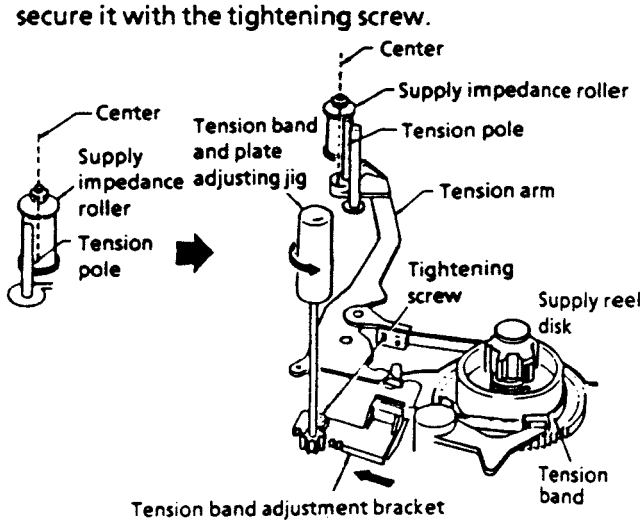


Figure 1-39.

CHECKING AND ADJUSTMENT OF RECORD / PLAYBACK BACK TENSION

- **Remove the cassette housing control assembly.**

- **Checking**

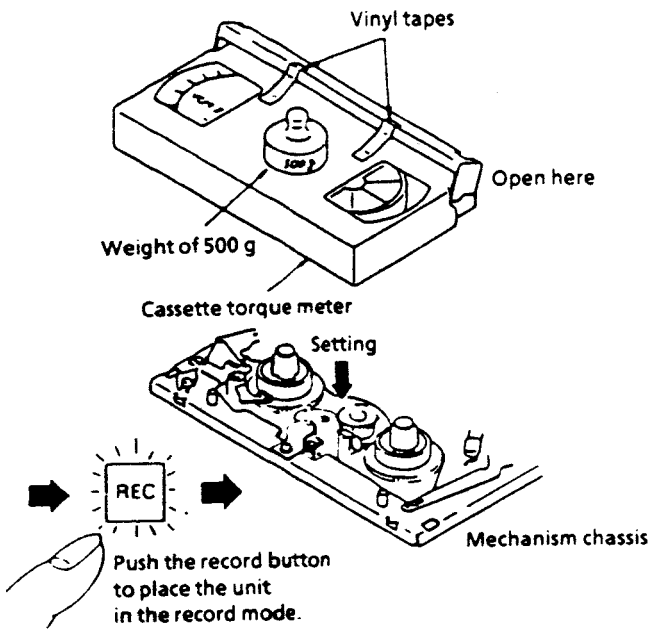


Figure 1-40.

1. Put a cassette torque meter into the unit.
2. Push the record button to place the unit in the record mode.
3. Check that the back tension indicated by the gauge is within the set range 31 to 36 g·cm.

Notes :

1. Make sure that the video cassette tape is over the retaining guide.
2. Make sure that the tape is not slack nor damaged at either end.

- **Adjustment**

1. If the reading of the cassette torque meter is less than specified, move the tip of the tension spring hook plate toward the hole A.
2. If the reading of the cassette torque meter is more than specified, move the tip of the tension spring hook plate toward the hole B.

   Note:

   Put a thin screw driver (–) in the shaft hole, lean it toward you, and turn it for easier shift of the tension spring hook plate in the direction of A or B.

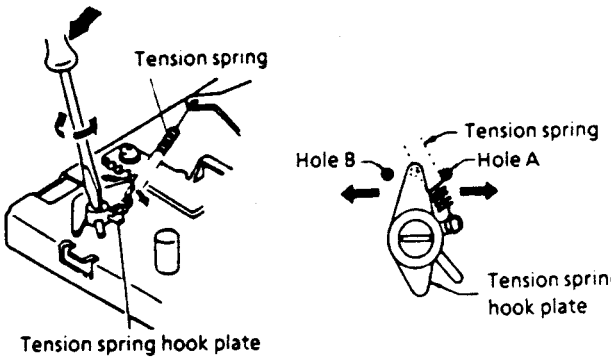


Figure 1-41.

CHECKING THE BRAKE TORQUE

- **Checking the brake torque at the supply side**

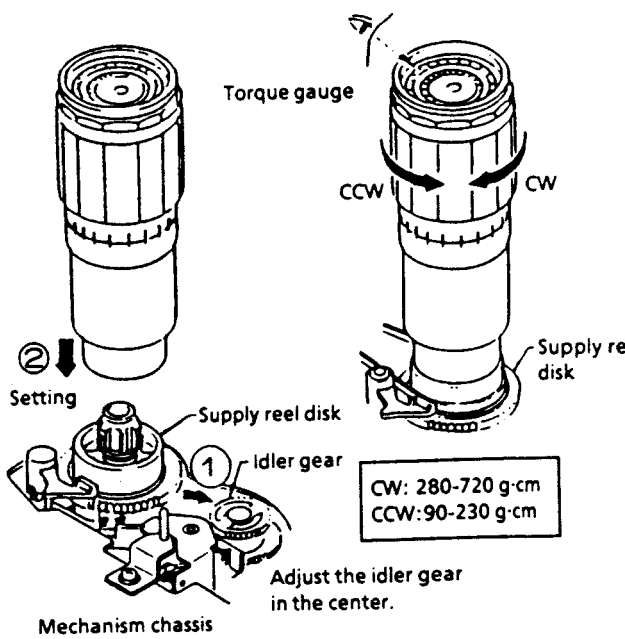


Figure 1-42.

1. Remove the cassette housing control assembly.
2. Place the mechanism in the stop mode by unplugging the power cord in the fast forward or rewind mode.
3. Slowly rotate the torque gauge in the clockwise (CW) direction and counterclockwise (CCW) direction of the supply brake so that the reel disk and the indicator of the torque gauge rotate at an equal rate. Check that the values are within the range of CW direction = 280 to 720 g·cm, CCW direction = 90 to 230 g·cm, and that the brake torque in the CW direction is at least twice as high as that in the CCW direction.

- **Checking the brake torque at the take-up side**

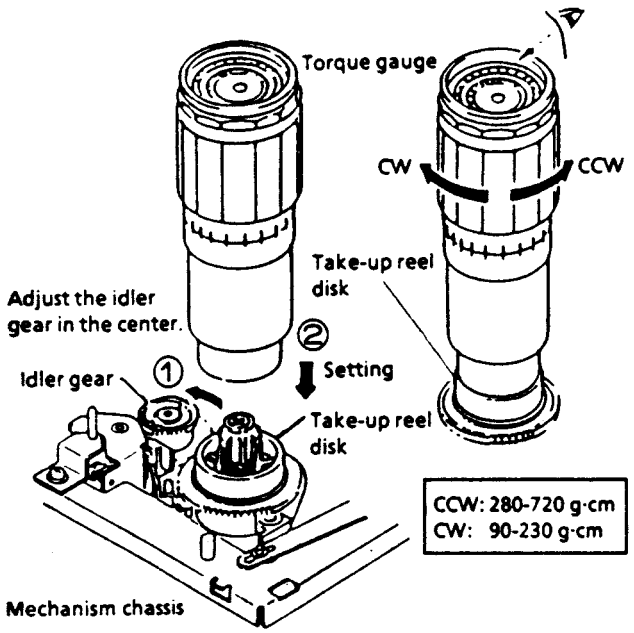


Figure 1-43.

1. Remove the cassette housing control assembly.
2. Slowly rotate the torque gauge in the clockwise (CW) direction and counterclockwise (CCW) direction of the take-up brake so that the reel disk and the indicator of the torque gauge rotate at an equal rate. Check that the values are within the range of CCW direction = 280 to 720 g·cm, CW direction = 90 to 230 g·cm, and that the brake torque in the CCW direction is at least twice as high as that in the CW direction.

- **Adjustment of the brake torque at the supply side and the take-up side**

1. If the supply or take-up brake torque is outside the range, clean the supply or take-up reel disk break lever felt, then recheck the torque.
2. If the supply or take-up brake torque is still outside the range, replace the main brake or the main brake spring.

REPLACEMENT OF MAIN BRAKE

1. Remove the reel belt and the reel block FFC (Full Flat Cable).
2. Remove the cut washer ① off the brake shifter.
3. Unscrew the four screws ② and then the take-up reel retainer.
4. Remove the reel block assembly Ⓐ downward.
5. Remove the cut washer ③ first and then the reel pulley.
6. Unscrew the two screws ④ and detach the idler assembly.
7. Unhook the back tension lever spring ⑤ and remove the back tension lever ⑥. (Undo the hook under the reel chassis.)
8. Open the shifter latch ⑦ and remove the brake shifter assembly ⑧.
9. Release the reel disk catches ⑬ and then remove the left and right reel disk assemblies ⑨ and ⑩.
10. Finally remove the main brake levers ⑪ and the main brake spring ⑫.

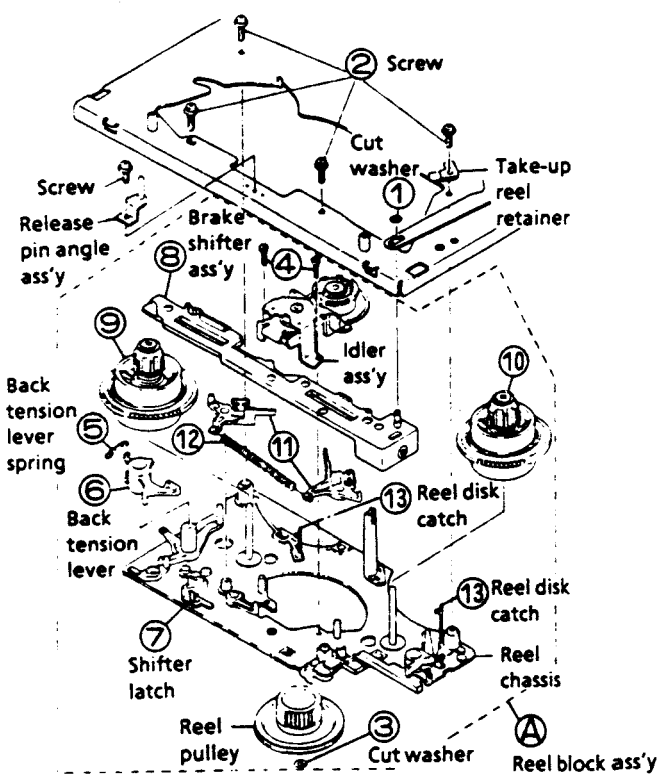


Figure 1-44.

Note :
When the main brake is replaced, perform the height checking and adjustment (see page 15), and the brake torque checking (see page 20).

REPLACEMENT OF A/C (Audio/Control) HEAD

1. Remove the cassette housing control assembly.
2. Place the unit in the unloading mode, and unplug the power cord.

- **Removal**

1. Loosen the tilt adjusting screw ①.
2. Remove the azimuth adjusting screw ②.
3. Remove the A/C head screw ③.
4. Unsolder the A/C head PWB soldered to the A/C head assembly.

Notes :

1. After replacement, be sure to perform the adjustment of the tape drive train (see page 24). Under any circumstances, avoid touching the head. Clean the head, if touched with your finger, with alcohol.
2. Take care that the azimuth spring does not fly off when removing the A/C head screw.

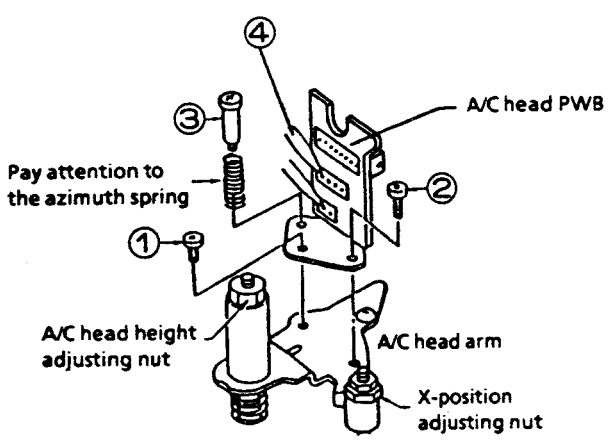


Figure 1-45.

- **Replacement**

1. Solder the removed A/C head PWB onto a new A/C head assembly.
2. The A/C head assembly is attached so that the A/C head arm and A/C head plate are roughly parallel to each other.

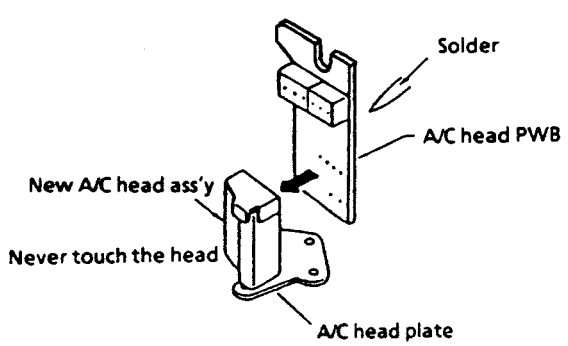


Figure 1-46.

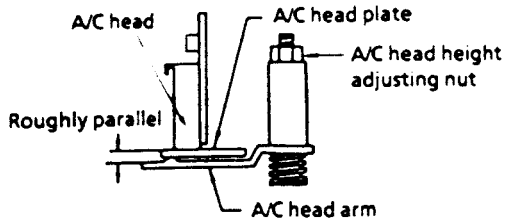
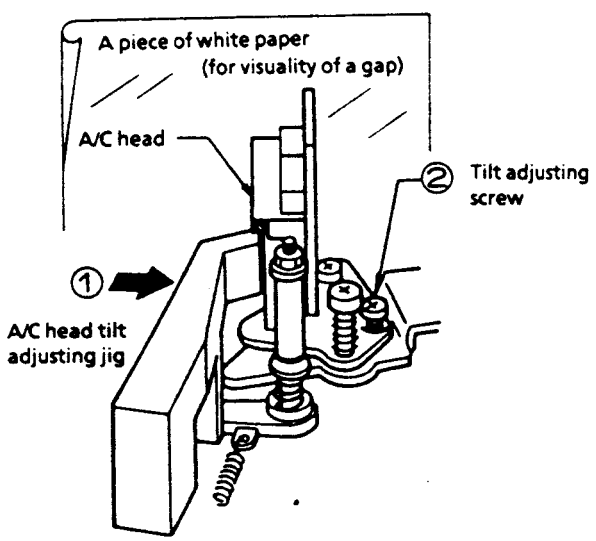


Figure 1-47.

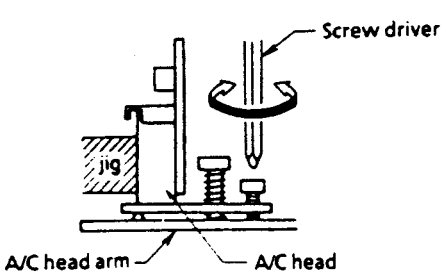
- **Adjustment**

[A/C head tilt angle]

1. Set the mechanism to the loading mode.
2. Place the A/C head tilt adjusting jig ①.
3. Slowly turn the tilt adjusting screw ② with a screw driver until there is no gap between the jig and the A/C head.



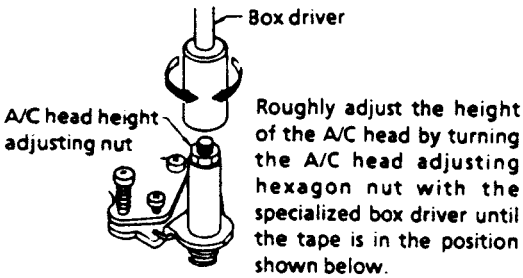
(a)

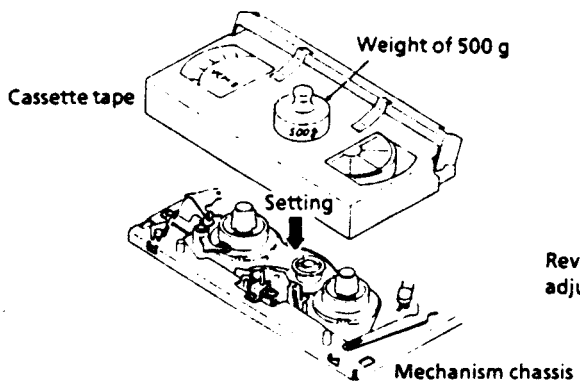


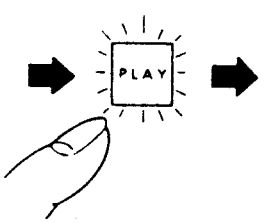
(b)

Figure 1-48.

[A/C head height rough adjustment]


Box driver
A/C head height adjusting nut
Roughly adjust the height of the A/C head by turning the A/C head adjusting hexagon nut with the specialized box driver until the tape is in the position shown below.





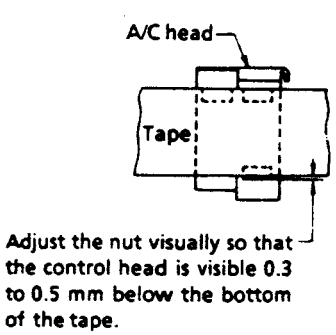


Figure 1-49.

HEIGHT ADJUSTMENT OF RETAINING GUIDE AND REVERSE GUIDE

Note :

Before the rough adjustment of the tape drive train, check that the retaining guide height is within the value in Figure 1-50 by using the special jigs.

[Height adjustment of retaining guide]

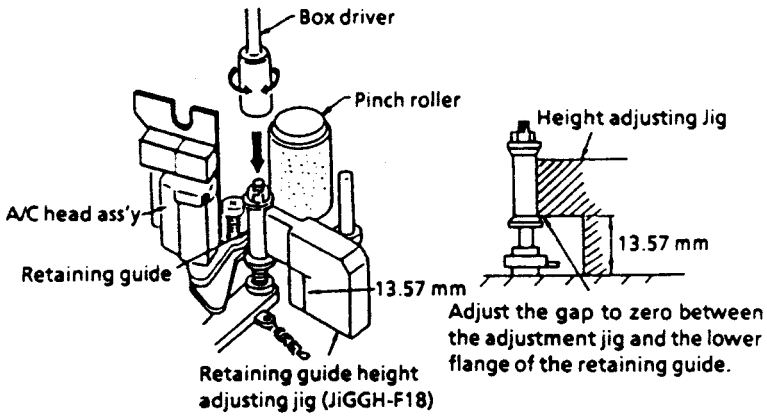
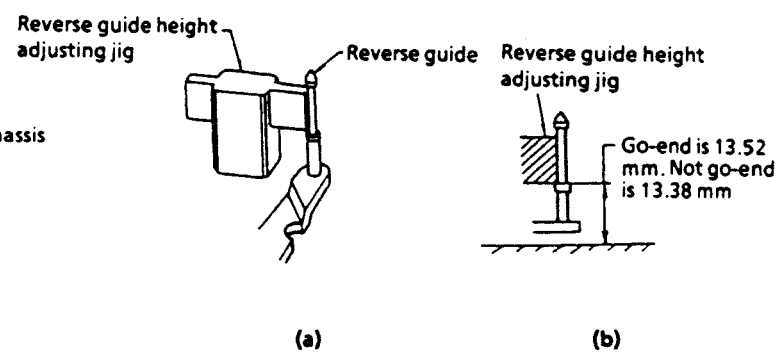


Figure 1-50.

[Height adjustment of reverse guide]



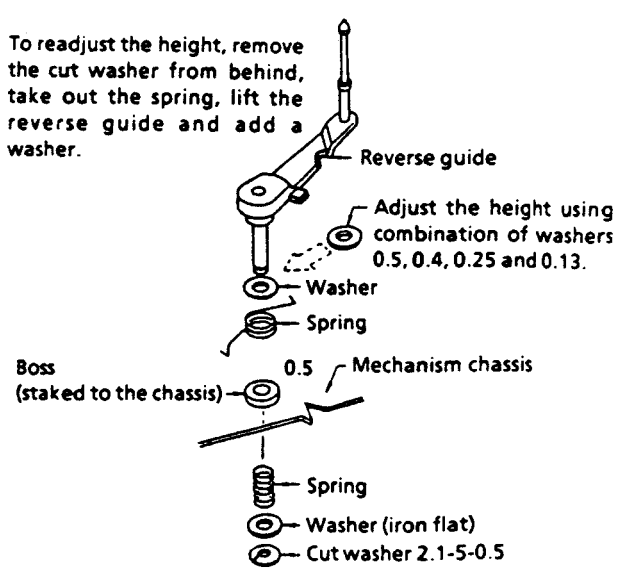

To readjust the height, remove the cut washer from behind, take out the spring, lift the reverse guide and add a washer.
Reverse guide
Adjust the height using combination of washers 0.5, 0.4, 0.25 and 0.13.
Washer
Spring
Boss (staked to the chassis)
0.5
Mechanism chassis
Spring
Washer (iron flat)
Cut washer 2.1-5-0.5
(c)

Figure 1-51.

ADJUSTMENT OF TAPE DRIVE TRAIN

1. Remove the cassette housing control assembly.
2. Check and adjust the position of the tension pole. (See page 19.)
3. Check and adjust the video search rewind back tension. (See page 18.)
4. Set the tilt angle of the A/C head. (See page 22.)
5. Rough adjustment of tape drive train.
   a) Connect the oscilloscope to the test point for PB CHROMA envelope output (TP2201). Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching pulse (TP2202).
   b) Loosen the setscrew at the lower part of the guide roller, and adjust it with an adjusting screw driver (JIGDRIVERH-4) so that the guide roller turns smoothly. (Do not overloosen the setscrew, which causes insecurity of the guide roller.) (See Figure 1-52.)
   c) Set the alignment tape (monoscope pattern) on the reel disk, and place the unit in the play-back mode.
   (Place a 500 g. weight on the cassette tape to prevent floating of the cassette tape.)

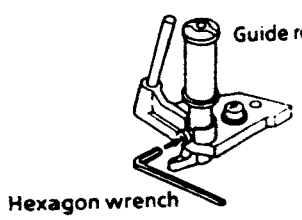


Figure 1-52.

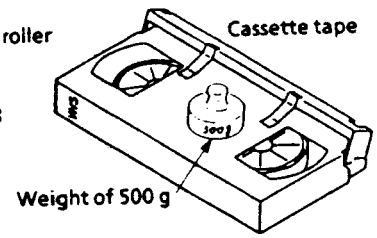
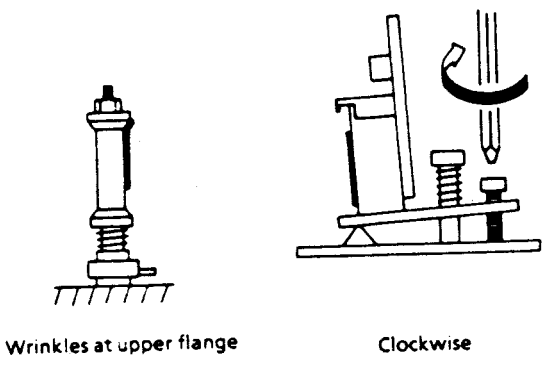
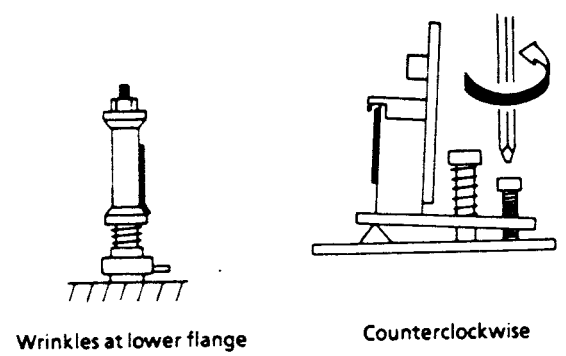


Figure 1-53.

   d) Change the envelope waveform from MAX to MIN, and MIN to MAX by pushing the (+) or (–) tracking button, and check a flat response is obtained on the waveform.
   e) If a flat response cannot be obtained, roughly adjust the guide rollers on the supply side and take-up side using an adjusting screw driver until a flat response can be obtained.
   f) Turn the A/C head tilt adjusting screw with a screwdriver to prevent the tape from wrinkling at the upper and lower flanges of the fixed guide.
      1) Wrinkles at the upper flange : Turn the above adjusting screw clockwise, as shown in Fig. 1-54 (a).
      2) Wrinkles at the lower flange : Turn the above adjusting screw counterclockwise, as shown in Fig. 1-54 (b).



(a)



(b)

Figure 1-54.

Notes:

1. Place the tracking control in the center position, and adjust the X-position adjusting nut so that the PB CHROMA envelop becomes maximum for easier rough adjustment of the tape drive train.
2. In the rough adjustment, pay particular attention to the outlet side.

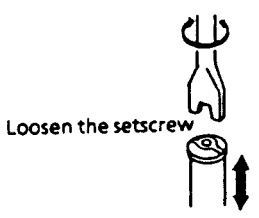


Figure 1-55.

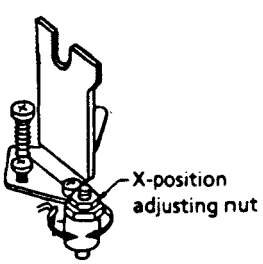


Figure 1-56.

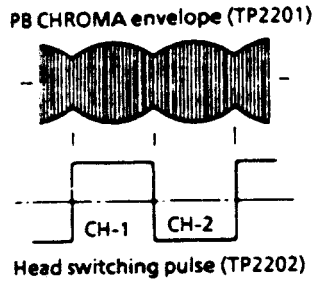


Figure 1-57.

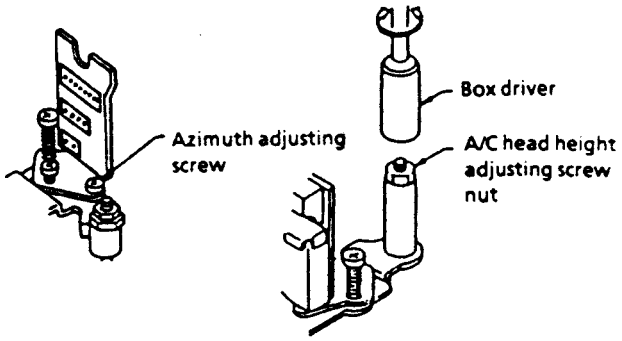


Figure 1-58.

Figure 1-59.

6. Adjustment of A/C head height and azimuth
   a) Connect an oscilloscope to the audio output terminal.
   b) Use the alignment tape and play back its audio 6 kHz signal (monoscope pattern for video signal). Adjust the azimuth adjusting screw to obtain the maximum audio output on an oscilloscope. (See Figure 1-58.)
   c) Use the alignment tape and play back its audio 1 kHz signal (colour bar for video signal) and slowly rotate the A/C head height adjusting nut with the special box driver to obtain the maximum audio output.
   d) Perform the adjustment in b) again.
   e) After this adjustment, apply glyptal to the screws and nuts to fix them.

7. Adjustment of tape drive train and X-Position.
   a) Connect the oscilloscope to the test points (TP2201) for PB CHROMA envelope output. Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching pulse (TP2202).
   b) Play back the tape drive train alignment tape.
   c) Push the (+) or (–) button to change the envelope waveform from MAX to MIN, and MIN to MAX. Adjust the guide roller's height on the supply and take-up sides with an adjusting screw driver, to obtain an envelop waveform that is as flat as possible.
   d) If the tape is above or below the helical lead, the PB CHROMA waveform will take the shape shown in Figure 1-60.
   e) Adjust for maximum flatness of the envelope as the step 5, e) in page 24.

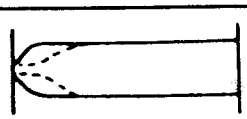
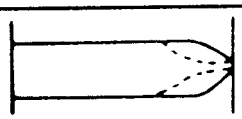
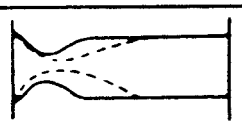
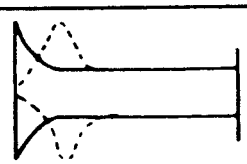
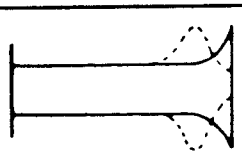
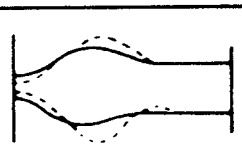
	When the tape is above the helical lead.		When the tape is below the helical lead.	
	Supply side	Take-up side	Supply side	Take-up side
				
				
Adjustment	Supply side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope.	Take-up side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope.	Supply side guide roller rotated in counterclockwise direction (raises guide roller) to make the tape float above the helical lead. The supply side guide roller is then rotated in the clockwise direction to flatten the envelope.	Take-up side guide roller rotated in counterclockwise direction (raises guide roller) to make the tape float above the helical lead. The take-up side guide roller is then rotated in the clockwise direction to flatten the envelope.

Figure 1-60.

f) Push the (+) or (–) tracking button to check that a flat response is obtained on the envelope waveform.
g) Secure the guide roller by tightening the guide roller setscrew in the unloading mode.
h) Play back the tape drive train alignment tape to check that the envelope waveform does not change.

8. Adjustment of A/C head X-position.
a) Push the (+) and (–) tracking buttons at the same time to the preset mode.
b) Rotate the X-position adjusting nut with an adjusting box driver, and adjust the A/C head position for maximum head switching pulse low side envelope.
c) Adjust the playback switching point.
d) Check the flatness of the envelope waveform and sound by playing back a recorded tape.

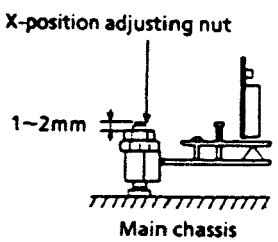


Figure 1-61.

REPLACEMENT OF THE CAPSTAN D.D. (DIRECT DRIVE) MOTOR

- **Remove the cassette housing control assembly.**

- **Removal (Follow the order of indicated numbers.)**

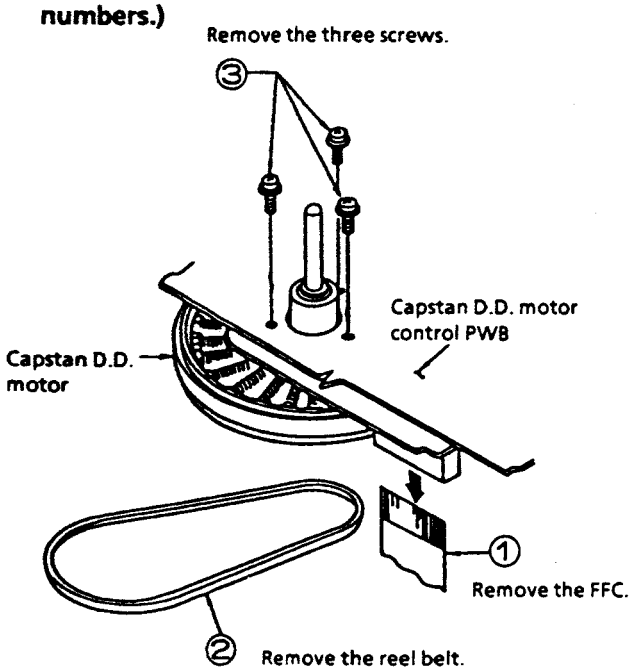


Figure 1-62.

- **Reassembly**

1. Mount the capstan motor on the mechanism chassis making sure not to allow the capstan shaft to hit the mechanism chassis, and attach it with the three screws.
2. Insert the FFC into the capstan D.D. motor control PWB.
3. Attach the reel belt.

Notes :

1. After installing the capstan D.D. motor, be sure to rotate the capstan D.D. motor and check the movement.
2. Check and adjust the servo circuit.

REMOVAL AND REASSEMBLY OF THE LOADING GEAR BLOCK

1. Remove the cassette housing control assembly.
2. Remove the reel belt.
3. Remove the reel block.

- **Removal**

Notes :

1. Use care not to deform the parts hooked to the take-up loading gear and supply loading gear as shown in Figure 1-63.

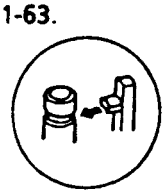


Figure 1-63.

2. In removing the loading gear, secure the guide roller with a rubber band or the like beforehand for easier reassembly.

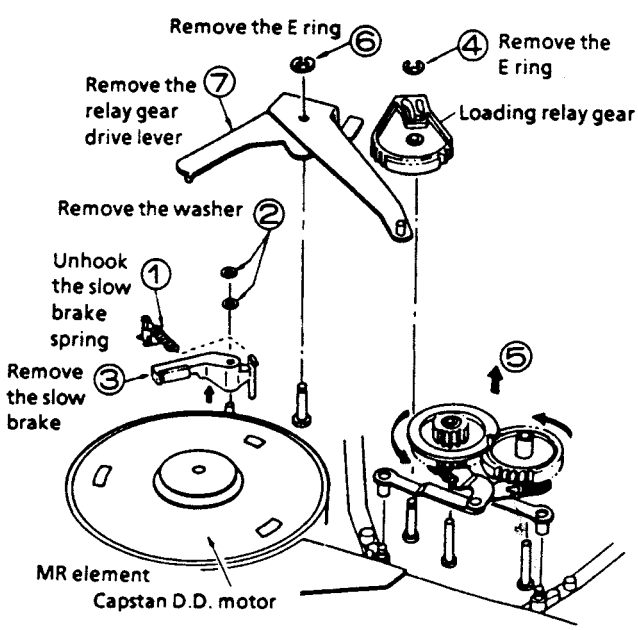

Remove the E ring ⑥
④ Remove the E ring
Remove the ⑦ relay gear drive lever
Loading relay gear
Remove the washer ②
Unhook the slow brake spring ①
Remove ③ the slow brake
⑤
MR element
Capstan D.D. motor

Figure 1-64.

1. Remove the slow brake spring ①.
2. Remove the cut washers ②.
3. Remove the slow brake lever ③.
4. Remove the E ring ④.
5. Rotate the take-up loading gear, take-up loading arm assembly, supply loading gear and supply loading arm assembly slightly in the loading direction, and take them ⑤ all out.
6. Remove the E ring ⑥.
7. Remove the relay gear drive lever ⑦.

- **Reassembly**

Reverse the procedure. Be sure to match the tally marks on the gears.

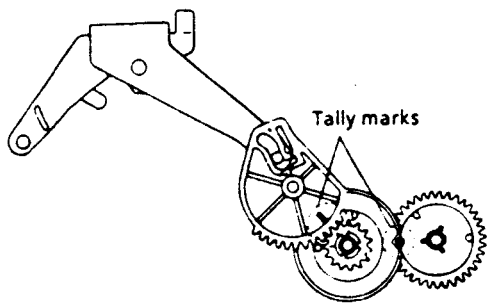


Figure 1-65.

Notes :

1. When reassembling, apply specified grease to the following points; all the gear teeth, all the gear shafts and the cam groove of loading relay gear.
2. Be careful not to deform the supply/take-up loading arms.
3. Be careful to keep clean the slow brake lever felt.
4. Be also careful to keep the outer surface of the capstan D.D. motor free from dust and dirt. (If stained, the MR (Magnet Resistor) element might be damaged.)
5. Take care not to deform the anti-fall hooks of the slow brake lever and supply/ take-up loading gears more than required.

REMOVAL AND REASSEMBLY OF LOADING BLOCK

- **Removal**

1. Remove the leads ①.
2. Remove the cassette loading belt ②.
3. Unscrew the three screws ③.
4. Pull the loading block upward.

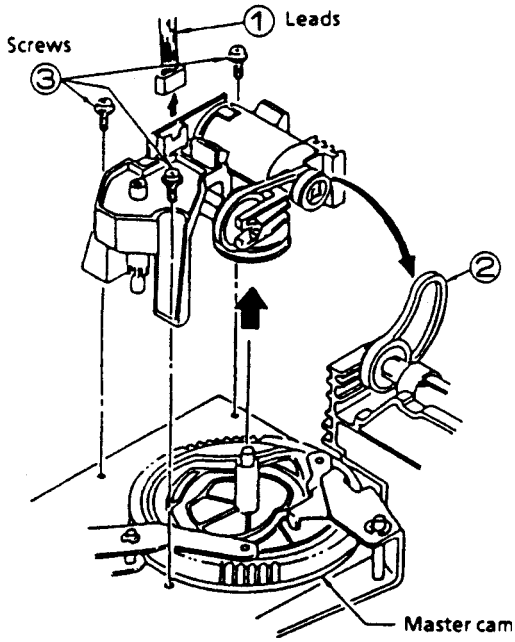


Figure 1-66.

Note :

When using a magnetic screw driver in removal of three screws, do not allow the magnetic driver to hit the A/C head or drums.

- **Reassembly**

1. Turn the master cam all the way counter-clockwise.
2. Match the tally mark on the cam switch with the mating mark. Fit the loading block and the master cam with each other. Tighten up the three screws.

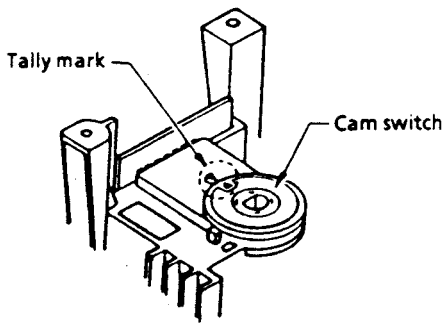


Figure 1-67.

3. Finally connect the leads and apply the cassette loading belt.

Notes:

1. Be careful not to scratch the gear.
2. Be careful not to stain the belt. If dirty, clean it up with the specified cleaning liquid.

REPLACEMENT OF LOADING MOTOR

1. Set the cassette ejected condition by placing the unit in the cassette eject mode.
2. Unplug the power cord.
3. Remove the loading block in accordance with the statements and drawings above.

- **Removal**

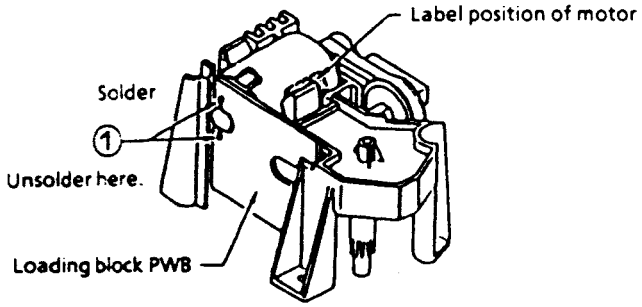


Figure 1-68.

1. Unsolder the leads ① from the loading motor.
2. Unlock the left and right catches ② of the cam switch off the loading block. Take out the cam switch and loading block PWB (See Figure 1-69).

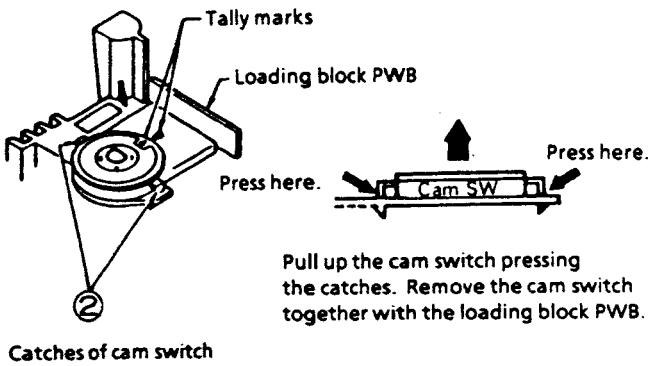

Tally marks
Loading block PWB
Press here.
Press here.
Cam SW
Pull up the cam switch pressing the catches. Remove the cam switch together with the loading block PWB.
②
Catches of cam switch

Figure 1-69.

3. Take out the loading belt ③.
4. Pry up the back end of the loading motor with a screw driver or the like as in Figure 1-70 and take out the motor.

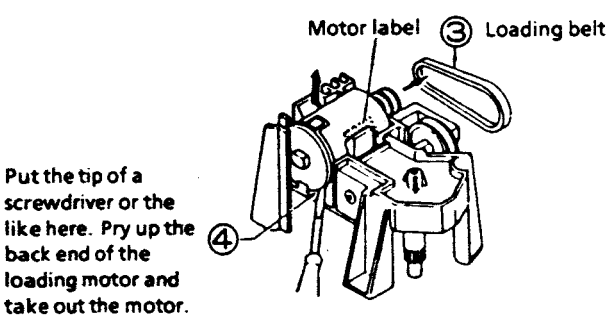

Motor label
③ Loading belt
Put the tip of a screwdriver or the like here. Pry up the back end of the loading motor and take out the motor.
④

Figure 1-70.

- **Reassembly**

1. Remove the loading motor, and mount a new loading motor as in Figure 1-71.
2. Place the loading motor so that its label is visible as shown in Figure 1-71. Make sure that the screw hole at the motor shaft, protuberance on the loading block, and the motor's back end marked with the arrow are mated with each other.

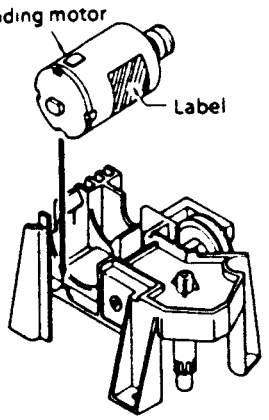
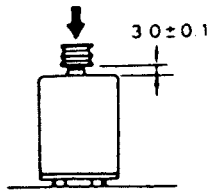


Figure 1-71.



Note:
When press-fitting the loading motor pulley, keep the pressure less than 5 kg, and the gap between the motor and pulley should be 3.0 ± 0.1 mm.

Figure 1-72.

3. Set the loading block PWB and the cam switch in position.
4. Resolder the leads to the loading motor.
5. Finally place the loading block (See page 27).
6. Attach the loading belt.

REPLACEMENT OF MASTER CAM

- **Removal**

1. Remove the E ring ①.
2. Remove the half-loading drive lever ②.
3. Remove the E ring ③.
4. Remove the pinch roller lever ④.
5. Pull out the master cam ⑤ upward.

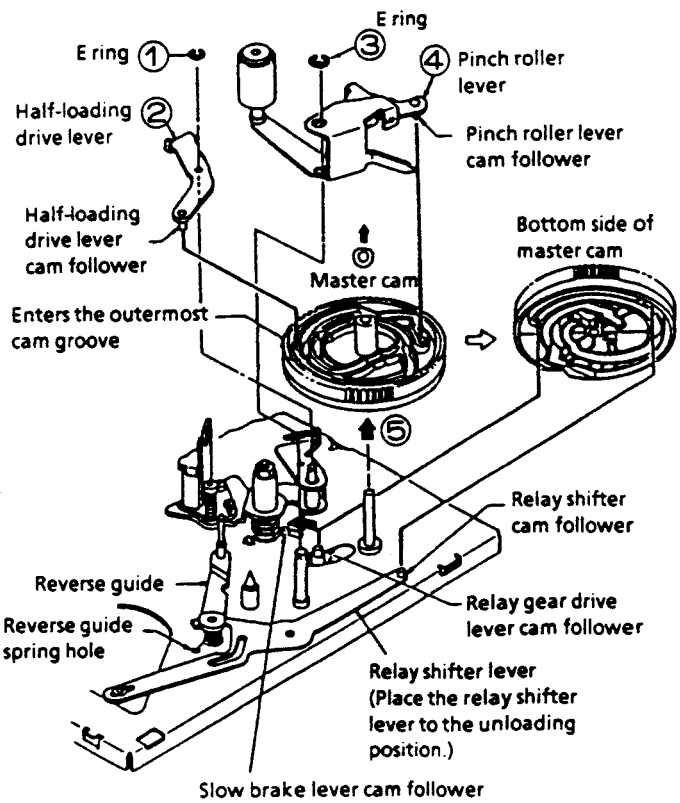

E ring
E ring ①
③
④ Pinch roller lever
Half-loading drive lever ②
Pinch roller lever cam follower
Half-loading drive lever cam follower
Bottom side of master cam
Master cam
Enters the outermost cam groove
⑤
Relay shifter cam follower
Reverse guide
Relay gear drive lever cam follower
Reverse guide spring hole
Relay shifter lever (Place the relay shifter lever to the unloading position.)
Slow brake lever cam follower

Figure 1-73.

- **Reassembly**

1. Place the relay gear drive lever in the unloading state.
2. Place the relay shifter so that it is in contact with the reverse guide spring hole in the mechanism chassis. Release the slow brake lever with a finger to bring it away from the capstan (in the direction of arrow). Then place the master cam so that the D cut-off part of the master cam faces the direction of arrow.
3. Place the half- loading recipro lever's cam follower so that it fits in the master cam's circumferential cam groove (marked with arrow), attach the E ring, then mount the half-loading recipro lever.
4. Turn the master cam somewhat clockwise until the pinch roller lever's cam follower goes into the master cam's groove (marked with arrow). Mount the pinch roller lever and then attach the E ring.
5. Rotate the master cam by hand to make sure all the four levers (relay gear drive lever, half-loading recipro lever, pinch roller lever, and relay shifter lever) are in the cam grooves in place.
6. Mount the loading block. (See page 27.)

Notes :

1. Be careful not to scratch the teeth and grooves of the master cam.
2. After installation of the master cam, be sure to rotate the master cam by hand before installing the loading block. If the levers are in wrong position, the master cam and the levers may get damaged when the motor stares.
3. Apply specified grease to the master cam's grooves and teeth.

REPLACEMENT OF UPPER DRUM

Note :

The gap between the lower drum and the upper drum is very accurate, in the order of microns, and care should be paid to their replacement. Even a slight amount of foreign material will affect the accuracy of their reassembly.

- **Replacement (Follow the order of the indicated numbers.)**

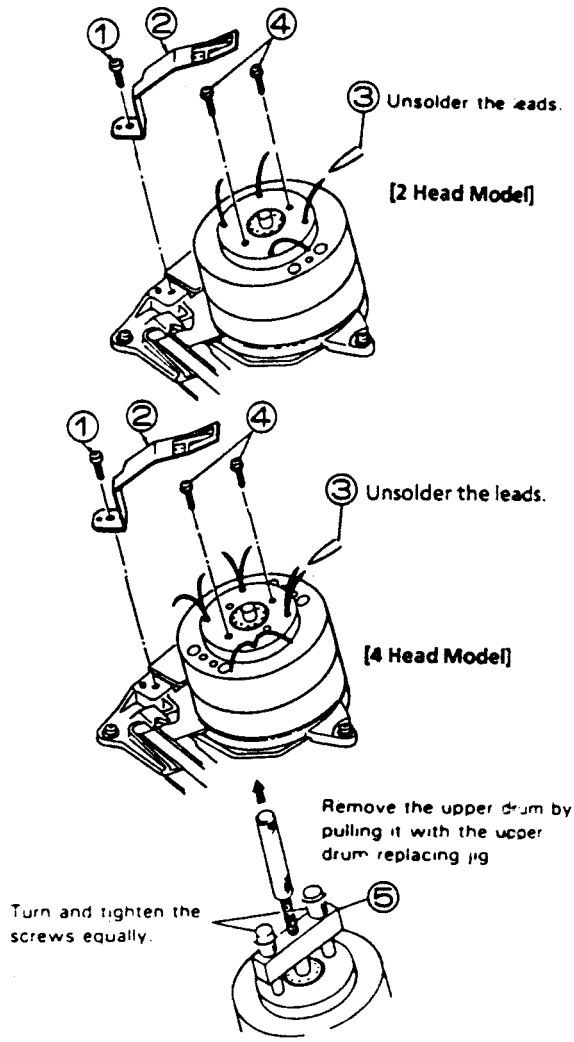


Figure 1-74.

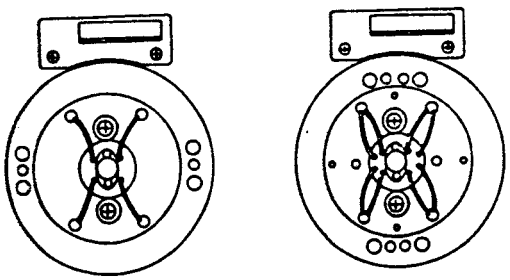
Notes :

1. Avoid touching the drum surface with bare hands.
2. Pull out the upper drum with care so that it may not be tilted, and replace it with the upper drum replacing jig using care not to damage the disk circumference.
3. Do not hit the screws when tightening them.

- **Reassembly**

Notes :

1. Before setting the drum, check that there are no scratches or dust on the edge of the surface and circumference of the disk.
2. Before setting the drum, check that there are no scratches or dust on the internal surface and edge of the surface of the upper drum.
3. On assembling these parts, insert the upper drum onto the disk with care, so that the upper drum is not tilted.
4. When assembling these parts, do not allow dust or dirt come between the disk and the upper drum.
5. Do not use excessive force when driving in the screws.



[2 Head Model] [4 Head Model]

Figure 1-75.

1. Set the new drum.
2. Fasten the upper drum in place with the two screws.
3. Solder the leads.
   Note:
   Soldering should be performed quickly and carefully without touching adjacent patterns.
4. After replacement, be sure to check the tape drive train adjustment (see page 24.) and the following electric adjustments.

- Adjustment of the playback switching point.
- Checking and adjustment of the X-position
- Adjustment of SP and LP slow tracking preset. (Only 4 Head model)

REPLACEMENT OF D.D. MOTOR

1. Put the unit in the cassette eject position.
2. Unplug the power cord.

- **Removal (Reverse the order in reassembly.)**

1. Remove the FFC ①.
2. Remove the two D.D. rotor assembly setscrews ②.
3. Pull out the D.D. rotor ass'y ③.
4. Remove the three D.D. stator setscrews ④.
5. Remove the D.D. stator assembly ⑤.

Notes :

1. When removing the D.D. rotor assembly or D.D. stator assembly, use care not to hit the loading relay gear.
2. Secure the D.D. rotor assembly so that the installation positioning holes in the D.D. rotor assembly and lower drum assembly match.
3. Be careful not to damage the upper drum or the video head.
4. Be sure that the hall device and the D.D. stator assembly are not damaged by the D.D. rotor assembly or other parts.
5. After installation, adjust the playback switching point.

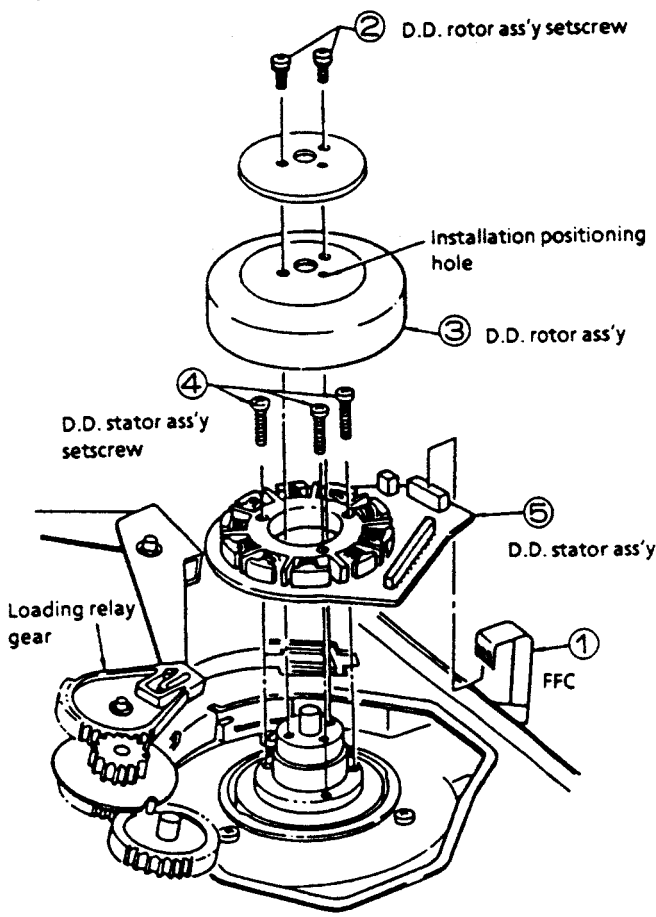


Figure 1-76.

REPLACING THE AHC (AUTOMATIC HEAD CLEANER)

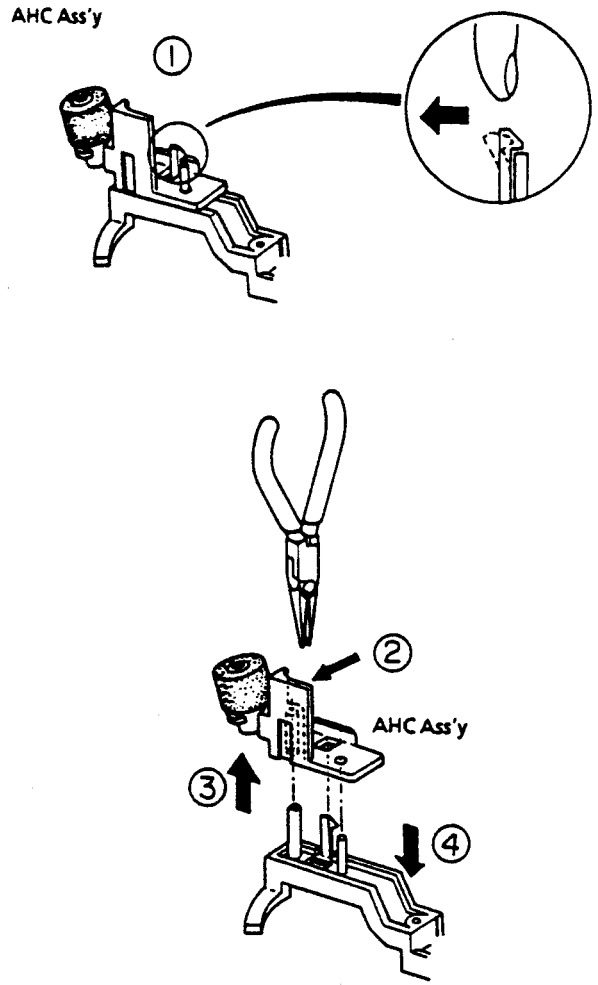


Figure 1-77

- **Removal**

1. Unhook part ① with a finger in the direction of arrow.
   Hold the rib (marked with an arrow) of the AHC ass'y ❷ with electrician's pliers or the like, and pull the ass'y upward in the direction of arrow ❸.

Note:
To pull out the AHC ass'y, hold the AHC lever down.

- **Reassembly**

1. Push down the AHC ass'y in the direction of arrow ④. Make sure that the ass'y is secured in position by the hook of part ①.

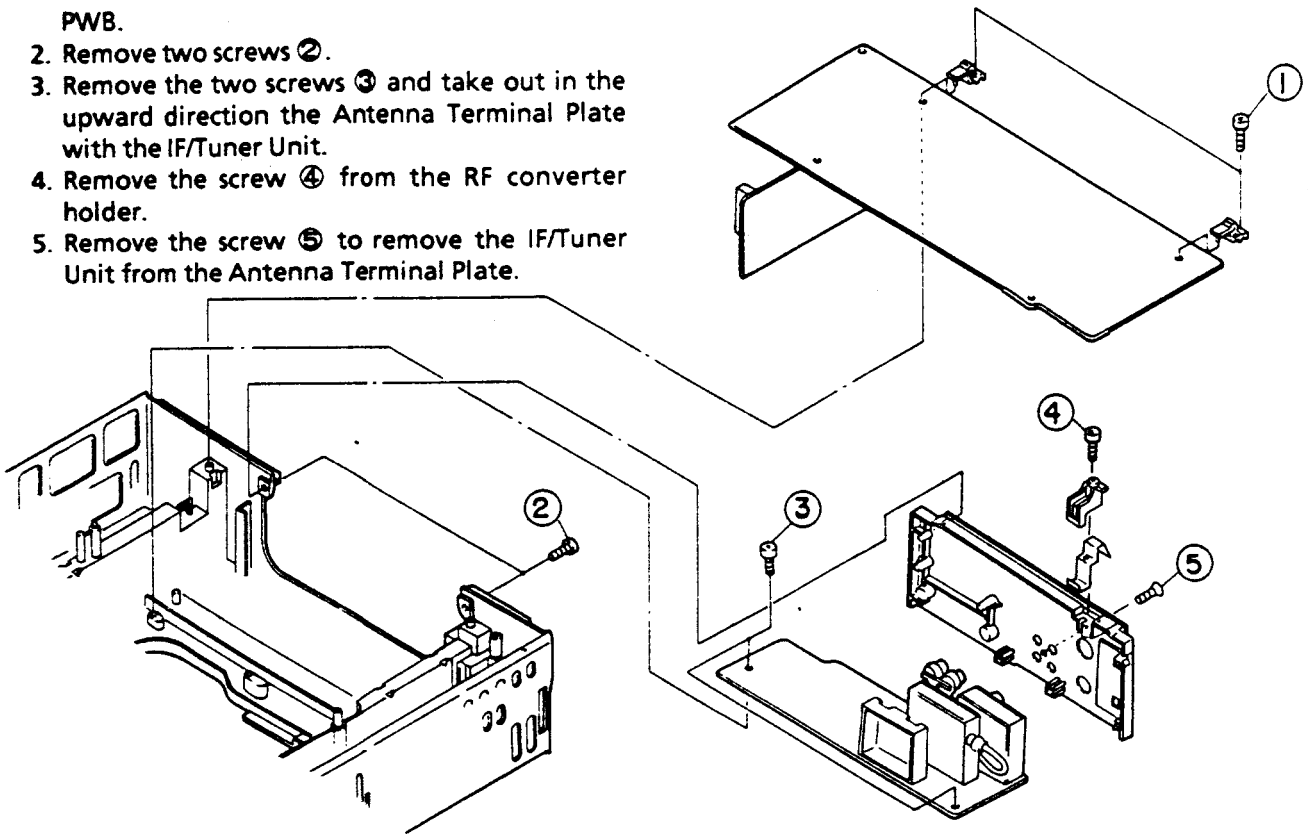
Notes:
1. Be careful to keep the AHC ass'y out of contact with the drum.
2. Be careful to keep the cleaner section of the ass'y free of grease or contaminants.

ADJUSTMENT OF THE ELECTRICAL CIRCUITRY

■ DISASSEMBLY OF IF/TUNER AND POWER UNITS

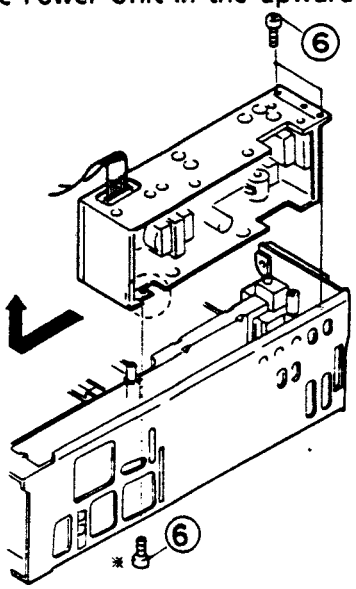
IF/Tuner Unit

1. Remove two screws ① which fasten the Main PWB.
2. Remove two screws ②.
3. Remove the two screws ③ and take out in the upward direction the Antenna Terminal Plate with the IF/Tuner Unit.
4. Remove the screw ④ from the RF converter holder.
5. Remove the screw ⑤ to remove the IF/Tuner Unit from the Antenna Terminal Plate.



Power Unit

1. Remove three screws ⑥ which fasten the Power Unit.
2. Slide the Power Unit in the direction of the arrow to uncouple it from the main frame, and remove the Power Unit in the upward direction.

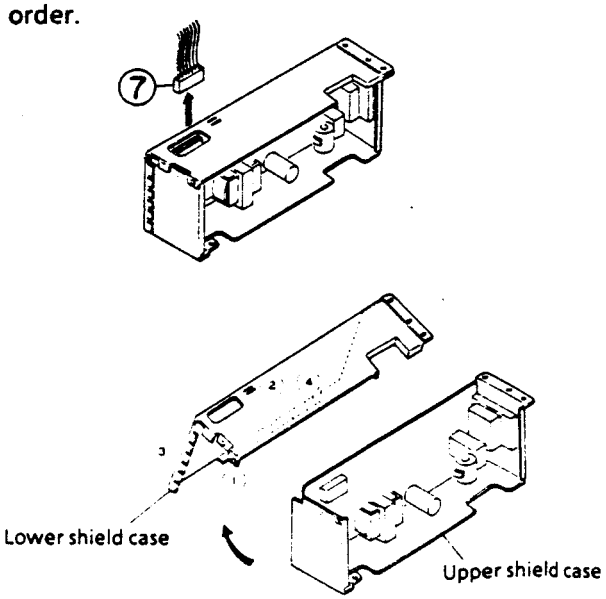


Note:
The screw marked (※) is used to tighten up the bottom plate.

Power Unit Shield Case

1. Remove the wire lead with Connector PA ⑦.
2. Hold the Upper Shield Case down and remove the Lower one by turning it in the direction of the arrow.

Note:
For easier coupling, fit at locations (1) to (4) in this order.



Prior to the adjustment:
In most cases, necessity for electrical circuits will arise from replacement of mechanical parts including the video head. Before starting adjustment of electrical circuits, check that mechanical operation of the equipment is complete (the mechanism are adjusted completely).

If the equipment fails electrically, locate a defect or defects first of all using instruments. Then repair or replace parts and make adjustment by the procedures described below.
When required instruments are not available, do not move controls indiscriminately.

- **Instruments**
  - Colour monitor TV
  - DC regulated power supply
  - VTVM
  - Oscilloscope
  - Audio generator
  - Connector (QCNW-6443GEZZ)
  - Colour bar generator
  - Alignment tape
  - Frequency counter
  - Blank video tape(VHS)

■ ADJUSTMENT OF POWER CIRCUIT

- **Test points layout**

Adjustment of power circuit (UR6.5V)

Measuring instrument	Voltmeter
Mode	Recording (SP mode)
Test point	Pin 4 of AP connector located on the Main PWB.
Control	R928
Adjusting point	6.6 ± 0.1 V

1. Remove the AC cord.
2. Remove the three power unit fastening screws. Lift up the power unit from front side and move it toward ⇦ direction.
3. Connect the AC cord and power supply.
4. Connect the voltmeter to Pin 4 of AP connector and Ground.
   (AP connector located on the MAIN PWB.)
5. Set the unit in the recording mode.
   Adjust R928 so that the voltmeter reads 6.6 ± 0.1V.

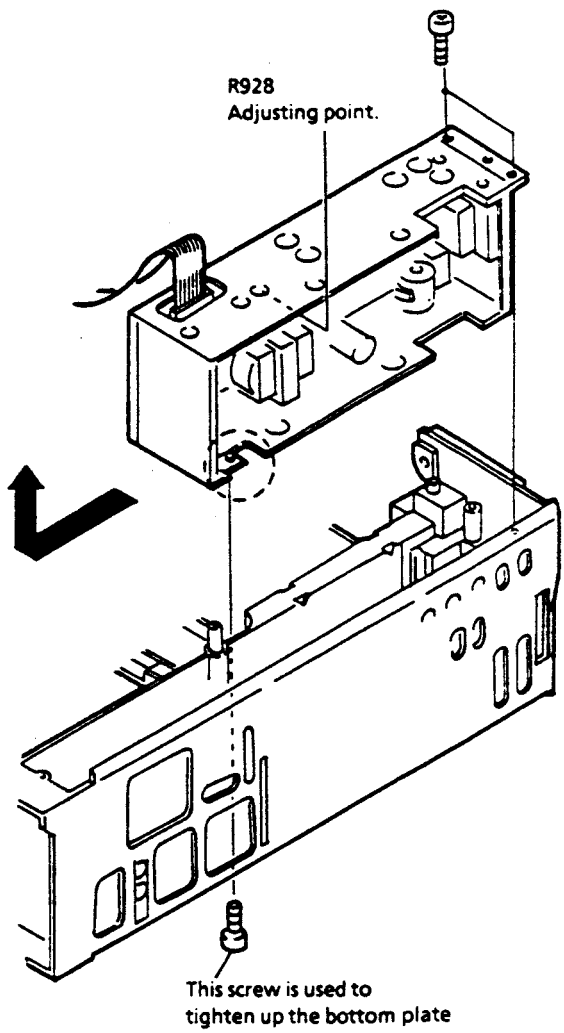


Figure 2-1. POWER PWB

■ ADJUSTMENT OF SYSTEM CONTROL/SERVO CIRCUIT

- **Test points layout**

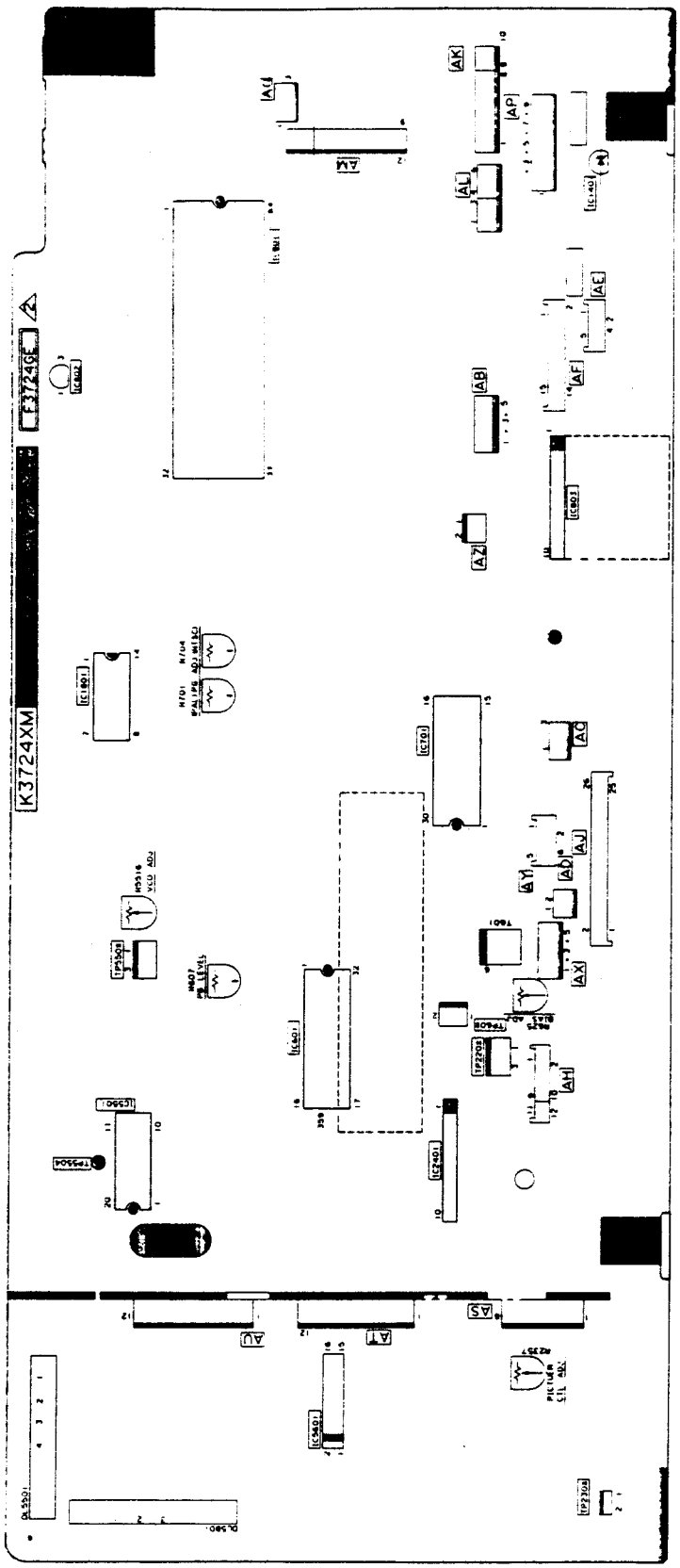


Figure 2-2. MAIN PWB

ADJUSTMENT OF SERVO CIRCUIT

Adjustment of PAL system playback switching point

Measuring instrument	Oscilloscope
Mode	Playback (Tracking at center)
Tape used	Alignment tape (VROCPSV)
Test point	CH-1; TP2202 CH-2; Video output terminal (CH-1 trigger slope switch at (+), Internal trigger at CH-1 side)
Control	R701 (Phase generator M.M.)
Specification	6.5 ± 0.5H

1. Insert the PAL system alignment tape (VROCPSV) and put the unit in the playback mode.
2. Press the unit to tracking in the center mode. (See note below.)
3. Adjust R701 (phase generator M.M.) so that the waveform on the oscilloscope screen be as shown Figure 2-3.

Note:

How to tracking in the center mode.

1. Remove the cassette housing.
2. Press the test button on the located on the timer PWB.

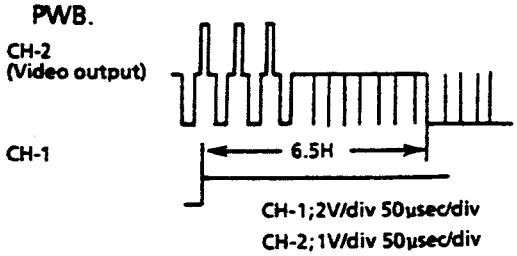


Figure 2-3.

Adjustment of PAL system SP/LP slow tracking. (The LP mode is VC-A63BP only)

Measuring instrument	Monitor TV
Mode	Recording and playback on self-recording tape.
Input signal	Commercial broadcast or video signal. (External input selector switch)
Test Point	Monitor screen
Adjusting point	Tracking control button (+) or (−)
Specification	No noise bar on the monitor TV screen

1. Play back the self-recording tape in the PAL system SP/LP mode.
2. Press the test button so that the test mode.
3. Be sure that all the fluorescent display tubes light up.
4. Press the slow button and playback the recorded portion in the slow mode.
5. Adjust the tracking control using the tracking button on the main unit or the remote controller so that there is no noise on the screen.
6. Press the stop button in the slow tracking preset data are memorized.
7. Press the all clear button in the return to normal mode.

Adjustment of still picture vertical sync.

Measuring instrument	Monitor TV
Mode	Still picture playback
Input signal	Self-recording tape
Test point	Monitor screen
Adjusting point	Tracking control button (+) or (−)
Specification	No noise jitter

1. Play back the self-recording tape in the PAL system SP mode.
2. Press the test button so that the test mode.
3. Be sure that all the fluorescent display tubes light up.
4. Press the still button and playback the recorded portion in the SP mode.
5. Adjust the tracking control using the tracking button on the main unit or the remote controller, make adjustment so that jitter becomes minimum.
6. Press the stop button in the still preset data are memorized.
7. Press the all clear button in the return to normal mode.

■ ADJUSTMENT OF Y/C CIRCUIT

- **Test point layout**

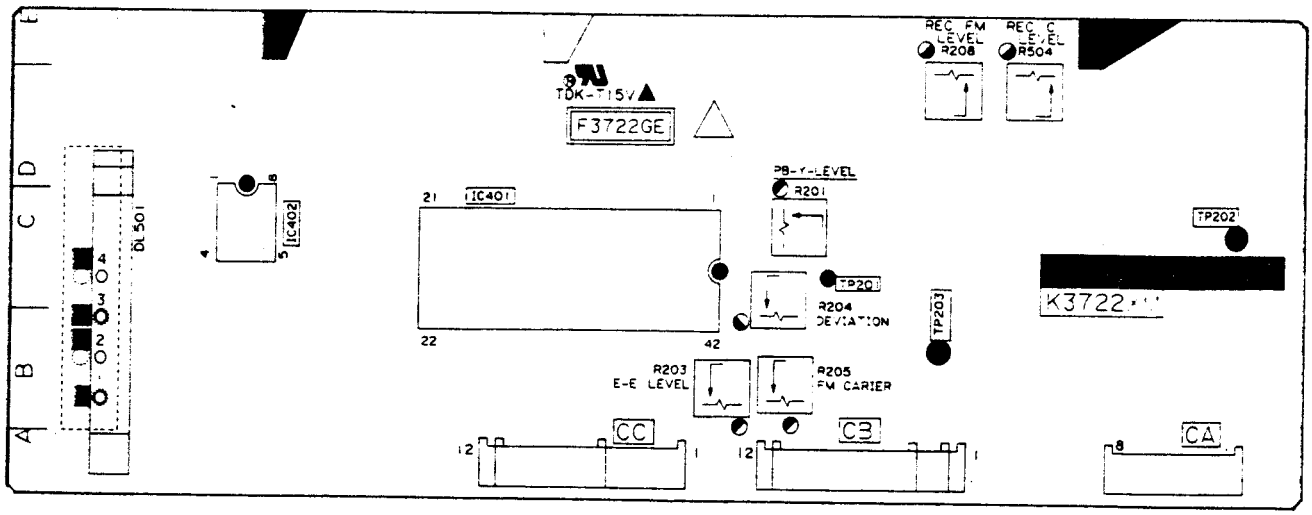


Figure 2-4. Y/C PWB

Adjustment of EE level

Measuring instrument	Oscilloscope
Mode	EE or Record
Input signal	Standard colour bar (stair-case waveform)
Test point	Video output terminal
Adjusting point	R203 (EE level control)
Specification	1.0 ± 0.06 Vp-p

1. Connect a 75 ohm resistor to the video output terminal and hook the oscilloscope across this resistor. (See note below.)
2. Feed the colour bar signal to the video input terminal in the EE or recording mode.
3. Adjust R203 so that the signal amplitude is 1.0 Vp-p as shown in Figure 2-5.

Note:
If the terminating resistor is missing, the signal amplitude will be doubled.

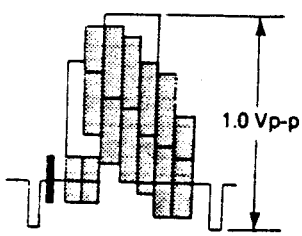


Figure 2-5.

Adjustment of playback video signal level

Measuring instrument	Oscilloscope
Mode	Playback
Tape used	Alignment tape (VROCPSV) (stair-case waveform)
Test point	Video output terminal
Adjusting point	R201 (Playback Y-level control)
Specification	1.0 ± 0.06 Vp-p

1. Connect a 75 ohm resistor to the video output terminal and connect an oscilloscope across this resistor. (See note below.)
2. Play the colour bar portion of the alignment tape and adjust R201 so that the signal amplitude is measured 1.0 Vp-p on the oscilloscope as shown in Figure 2-6.

Note:
If the terminating resistor is missing, the signal amplitude will be doubled.

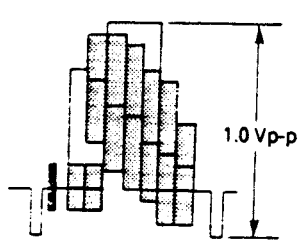


Figure 2-6.

Adjustment of FM carrier and deviation

Measuring instrument	Frequency counter, Oscilloscope
Mode	Record/Playback (2Head: SP, 4Head: LP)
Input signal	Standard colour bar (stair-case waveform)
Test point	TP301 (GND at TP302) Video output terminal
Adjusting point	R205 (FM carrier control) R204 (Deviation control)
Specification	3.8 ± 0.05 MHz 1.0 ± 0.04 Vp-p

1. Make sure that R203 (E-E level) and R201 (playback Y-level) have been correctly adjusted.
2. Connect a 75 ohm terminating resistor to the video output terminal and connect an oscilloscope across this resistor.
3. Connect a frequency counter to TP301 and TP302.
4. Place the unit in record mode and get it ready for external input with no signal. (Disconnect any cable from video input terminal.)
5. Adjust R205 so that the frequency counter reading be 3.8 MHz.
6. Feed the standard colour bar signal (stair-case waveform) and make self-recording and playback.
7. Observe the video output terminal voltage (across the terminal resistor) on the oscilloscope screen. If the playback video signal level is above 1.0 Vp-p, turn R204 clockwise.
   If below 1.0 Vp-p, turn the control counter clockwise. Now make self-recording and playback again.
8. Repeat the above step 7 to finally get the playback video signal level at 1.0 ± 0.04 Vp-p, as shown in Figure 2-7.

Note:

1. Carry out this adjustment only when IC401 has been replaced or when the carrier setting (3.8 MHz) or the deviation is found apparently out of specification.
2. If the terminating resistor is missing the signal amplitude will be doubled.

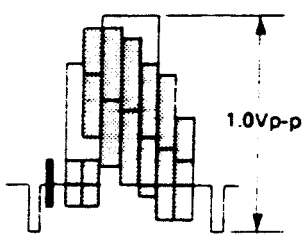
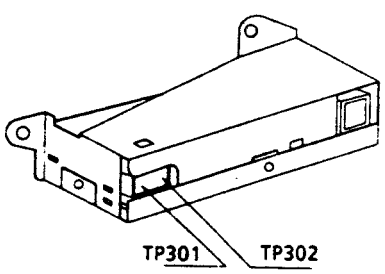


Figure 2-7.

Adjustment of recording current

Measuring instrument	Oscilloscope
Mode	Record (2 Head: SP mode, 4 Head: LP mode)
Input signal	Standard colour bar (stair-case waveform)
Test point	TP301, TP302 (GND) [External trigger: Video output terminal]
Adjusting point	R504 (Record Chroma Level Control) R208 (Record FM level control)
Specification	(30 (2Head), 20 (4Head)) ± 2 mVp-p (Chroma) (130 (2 Head), 100 (4 Head)) ± 10 mVp-p (FM-Y)

1. Feed the standard colour bar signal (stair-case waveform) to the video input terminal.
2. Connect the oscilloscope's GND and SIG leads to TP302 and TP301, respectively.
   (for convenient connection of the oscilloscope, use QCNW-6443GEZZ.)
3. Set the unit to the SP/LP recording mode.
4. Turn R208 to minimize the FM luminance signal.
5. Adjust R504 so that the amplitude of red portion is 30 (2 Head) /20 (4Head) ± 2mVp-p as shown in Figure 2-8.
6. Adjust R208 so that the amplitude of sync tip portion is 130 (2Head) /100 (4Head) ± 10 mVp-p as shown in Figure 2-9.
7. Remove QCNW-6443GEZZ after adjustment. (Also remove connecting probe of TP301 and TP302.)



Note:

TP301 and TP302 are located on the head amp module.

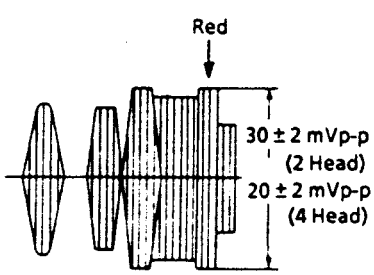


Figure 2-8.

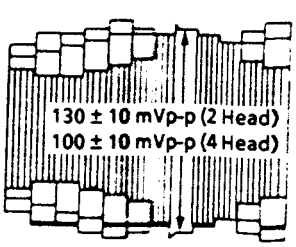


Figure 2-9.

■ ADJUSTMENT OF AUTO PICTURE CONTROL CIRCUIT

- **Test points layout**

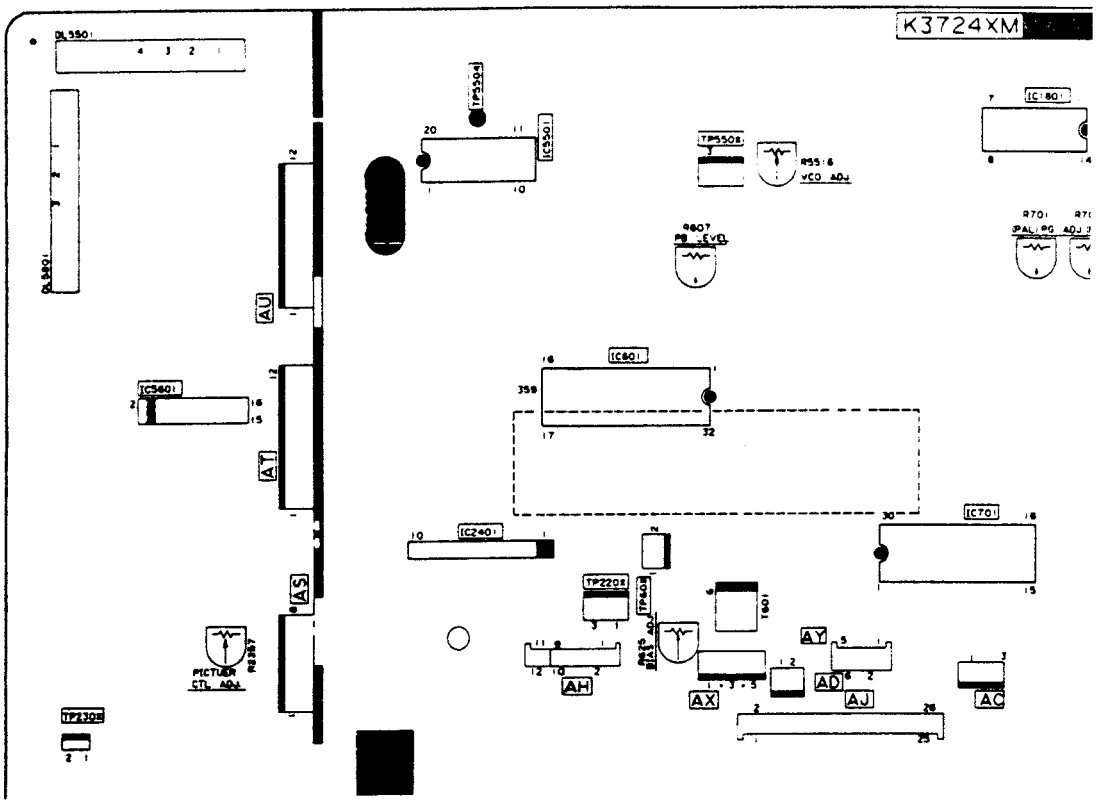


Figure 2-10. MAIN PWB

Adjustment of auto picture control

Measuring instrument	Digital volt meter
Mode	Recording and playback on self-recording tape
Input signal	Standard colour bar (stair-case waveform)
Test point	TP2301 (SIG), TP2302 (GND)
Adjusting point	R2357 (Picture control)
Specification	VC-A33BP: 2.4 ± 0.1V VC-A63BP: 2.5 ± 0.1V

1. Play back the tape self-recorded. (Colour bar signal.)
2. Set the auto picture switch to "ON" or "AUTO PICTURE" position and picture tone volume in center.
3. Connect the digital volt meter to TP2301 (SIG) and TP2302 (GND). Adjust R2357 so that the digital volt meter reads VC-A33BP: 2.4 ± 0.1V / VC-A63BP: 2.5 ± 0.1V.

■ ADJUSTMENT OF AUDIO CIRCUIT

- Test point layout

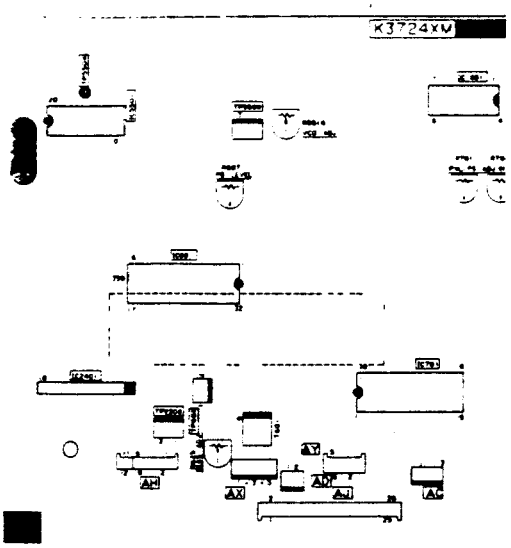


Figure 2-11. MAIN PWB

Adjustment of playback level

Measuring instrument	VTVM
Mode	Playback
Input signal	Alignment tape (VROCPSV) (1kHz level control signal)
Test point	Audio output terminal
Adjusting point	R607 (Playback level control)
Specification	−9 ± 1 dBs

1. Play back the alignment tape (1kHz level control signal).
2. Hook up the VTVM to the audio output terminal.
3. Adjust R607 (playback level control) so that the output level be −9 ± 1 dBs.

Checking of erase voltage and oscillation frequency

Measuring instrument	Oscilloscope
Mode	Recording
Input signal	————
Test point	Both ends of the full-erase head
Adjusting point	————
Specification	Erase voltage; Over 40 Vp-p Oscillation frequency; 70 ± 5kHz

1. Place the unit to the record mode.
2. Hook up the oscilloscope to both ends of the full-erase head.
3. Make sure the erase voltage is over 40 Vp-p.
4. Be sure that the oscillation frequency is 70 ± 5kHz.

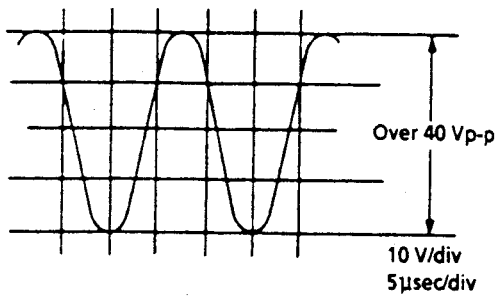


Figure 2-12.

Adjustment of bias current

Measuring instrument	VTVM
Mode	Recording
Input signal	————
Test point	TP601 (SIG), TP602 (GND)
Adjusting point	R625 (Bias current control)
Specification	280 ± 10µA

1. Place the unit to the record mode.
2. Connect the VTVM to TP601 (SIG) and TP602 (GND).
3. Adjust R625 (Bias current control) so that the bias current be 280 ± 10µA (2.8 ± 0.1mV).

Checking of recording level

Measuring instrument	VTVM
Mode	Self-recording/playback
Input signal	1 kHz / −8 dBs
Test point	Audio output terminal
Adjusting point	————
Specification	1 kHz − 8 ± 3 dBs

1. Feed 1 kHz, −8 dBs signal to the audio input terminal. Make self-recording and playback of the signal.
2. Make sure the output at the Audio output terminal is 1 kHz − 8 ± 3 dBs.
3. If out of spec, readjust the playback level and the bias current.

■ ADJUSTMENT OF THE IF CIRCUIT

Adjustment of the RF AGC

Measuring instrument	Oscilloscope Signal generator
Mode	EE
Input signal	Colour bar signal
Test point	TP1551 (GND) TP1552 (Video output)
Adjusting point	VR001 (AGC control)

1. Receive the colour bar signal (input field strength: 80 dBμ).
2. Observe the video output terminal waveform on the oscilloscope. Adjust VR001 (AGC control) in the IF pack until the noise disappears from the oscilloscope screen and the waveform nearly comes into sync.

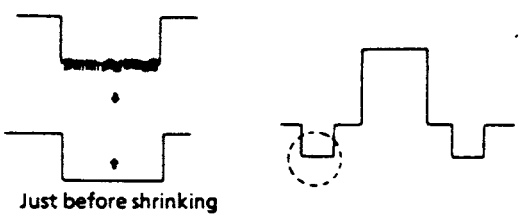
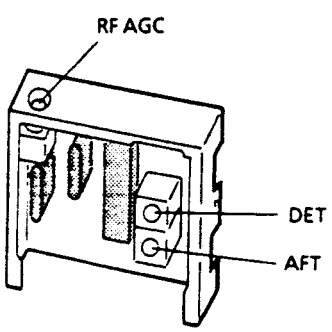


Figure 2-13.

Adjustment of the AFT

Measuring instrument	Oscilloscope Signal generator
Mode	EE
Input signal	PIF frequency uniwave Colour bar signal (70 dBμ)
Test point	TP1551 (GND) TP1552 (Video output)
Adjusting point	T002 (AFT coil)
Specification	———

1. Receive the colour bar signal (input field strength: 70 dBμ).
2. Using the signal generator, feed the PIF frequency (38.9MHz) signal (sinewave) to the tuner IF output terminal.
3. Set the tuning switch to the VHF or UHF position. Keep the tuning button (+) or (−) depressed until the beating on the oscilloscope screen be minimum.
4. Set the tuning switch on the normal position. Adjust the T002 (AFT coil) so that beating on the oscilloscope screen be minimum.



IF Module

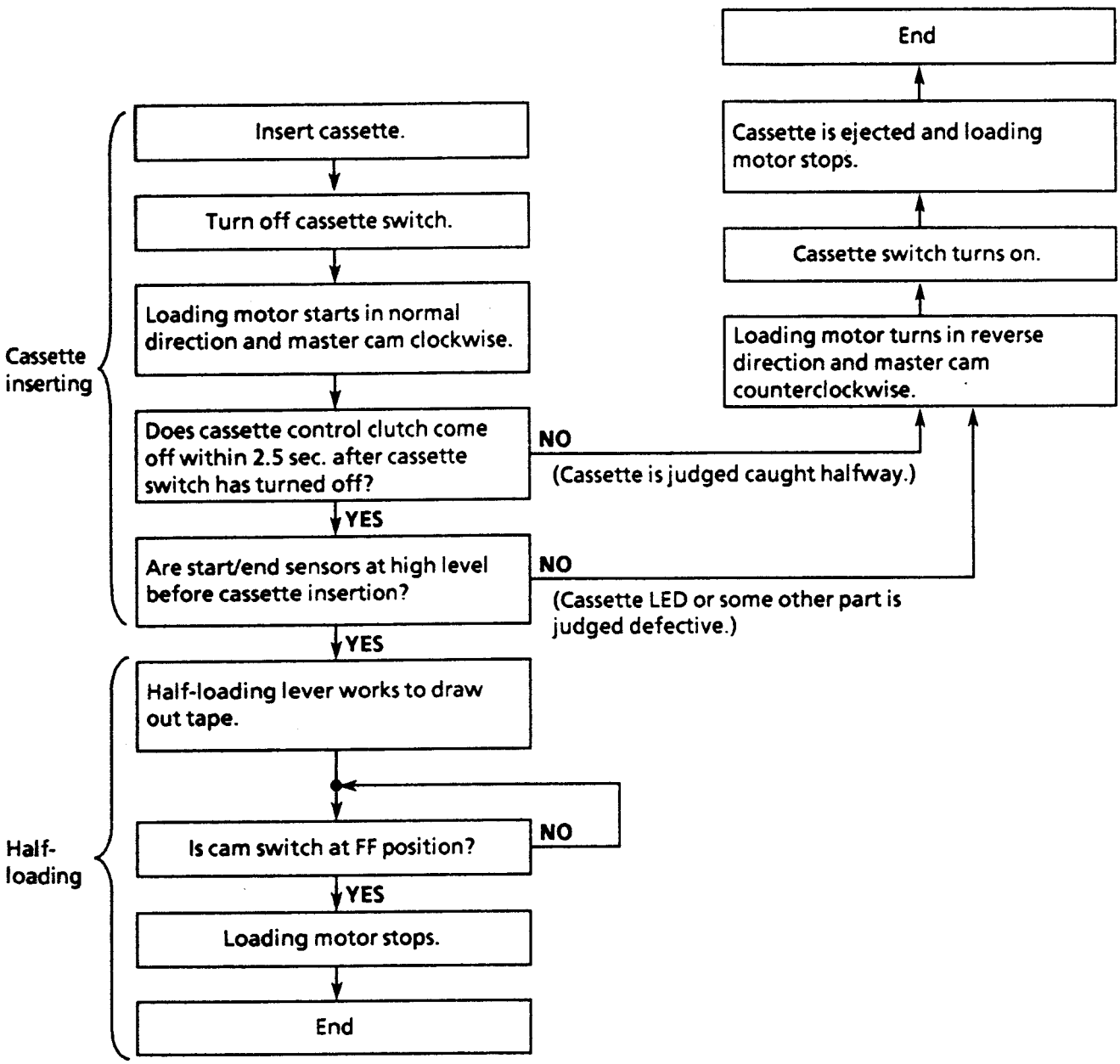
Figure 2-14.

MECHANISM OPERATION FLOW CHART AND TROUBLESHOOTING GUIDE

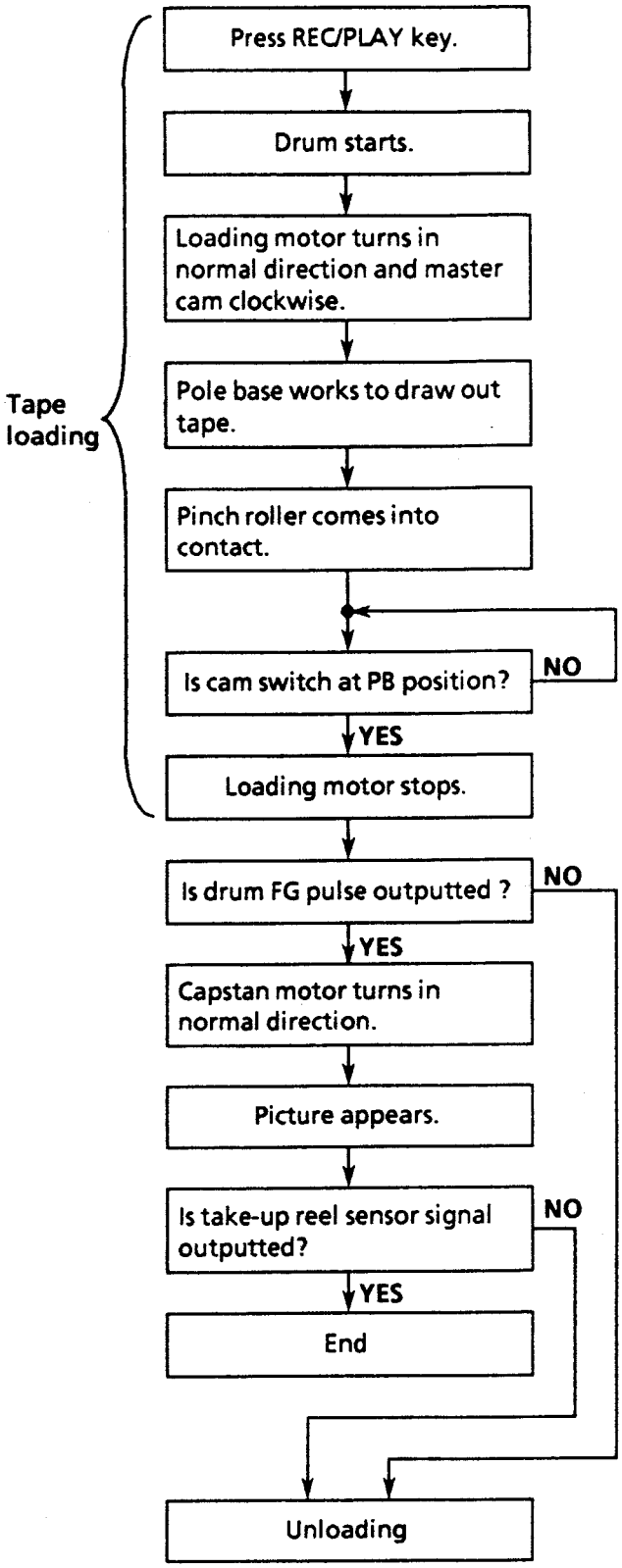
MECHANISM OPERATION FLOW CHART

* This flow chart describes the outline of the mechanism's operation, but does not give its details.
* For cam switch positions, see Fig. 3-2.

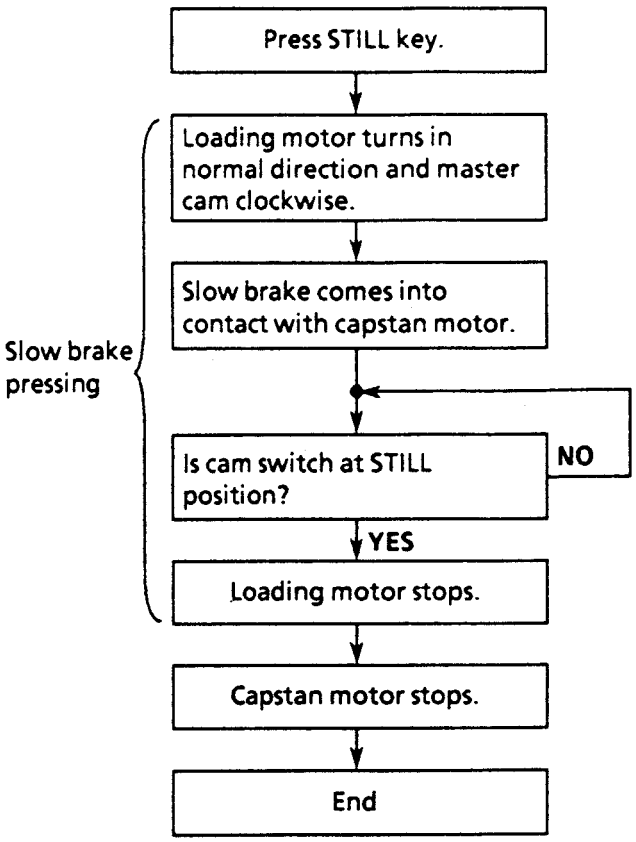
CASSETTE INSERTION → STOP


Insert cassette.
Turn off cassette switch.
Loading motor starts in normal direction and master cam clockwise.
Does cassette control clutch come off within 2.5 sec. after cassette switch has turned off?
NO
(Cassette is judged caught halfway.)
YES
Are start/end sensors at high level before cassette insertion?
NO
(Cassette LED or some other part is judged defective.)
YES
Cassette inserting
Half-loading lever works to draw out tape.
Is cam switch at FF position?
NO
YES
Half-loading
Loading motor stops.
End
Loading motor turns in reverse direction and master cam counterclockwise.
Cassette switch turns on.
Cassette is ejected and loading motor stops.
End

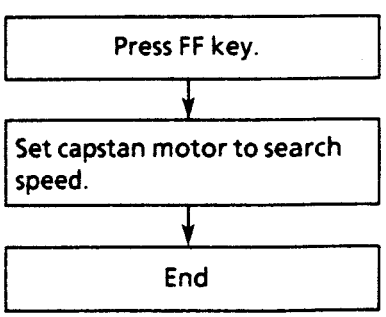
STOP → REC/PLAY



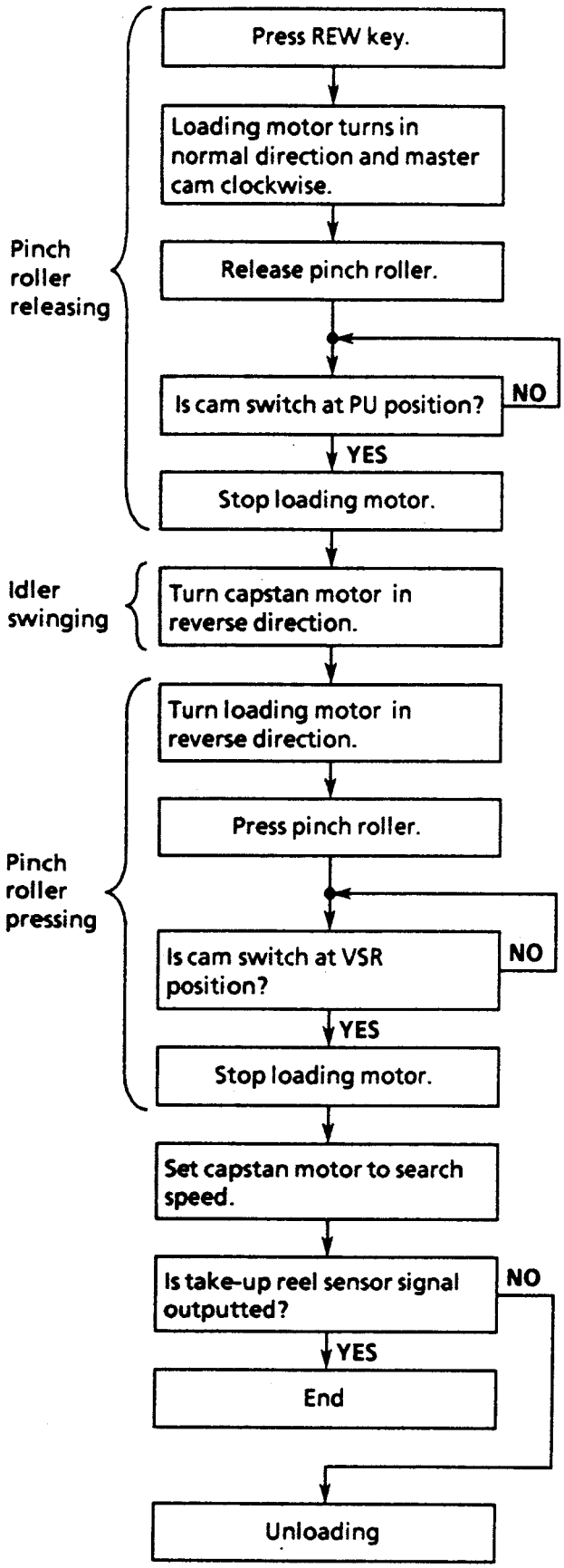
PLAY → STILL



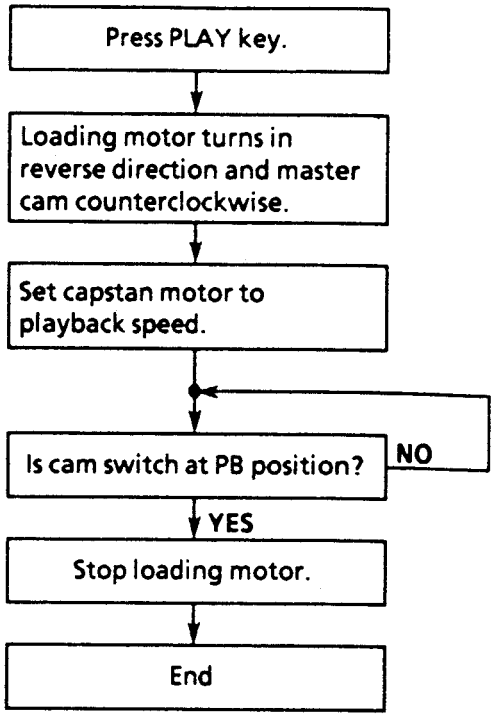
PLAY → VSF



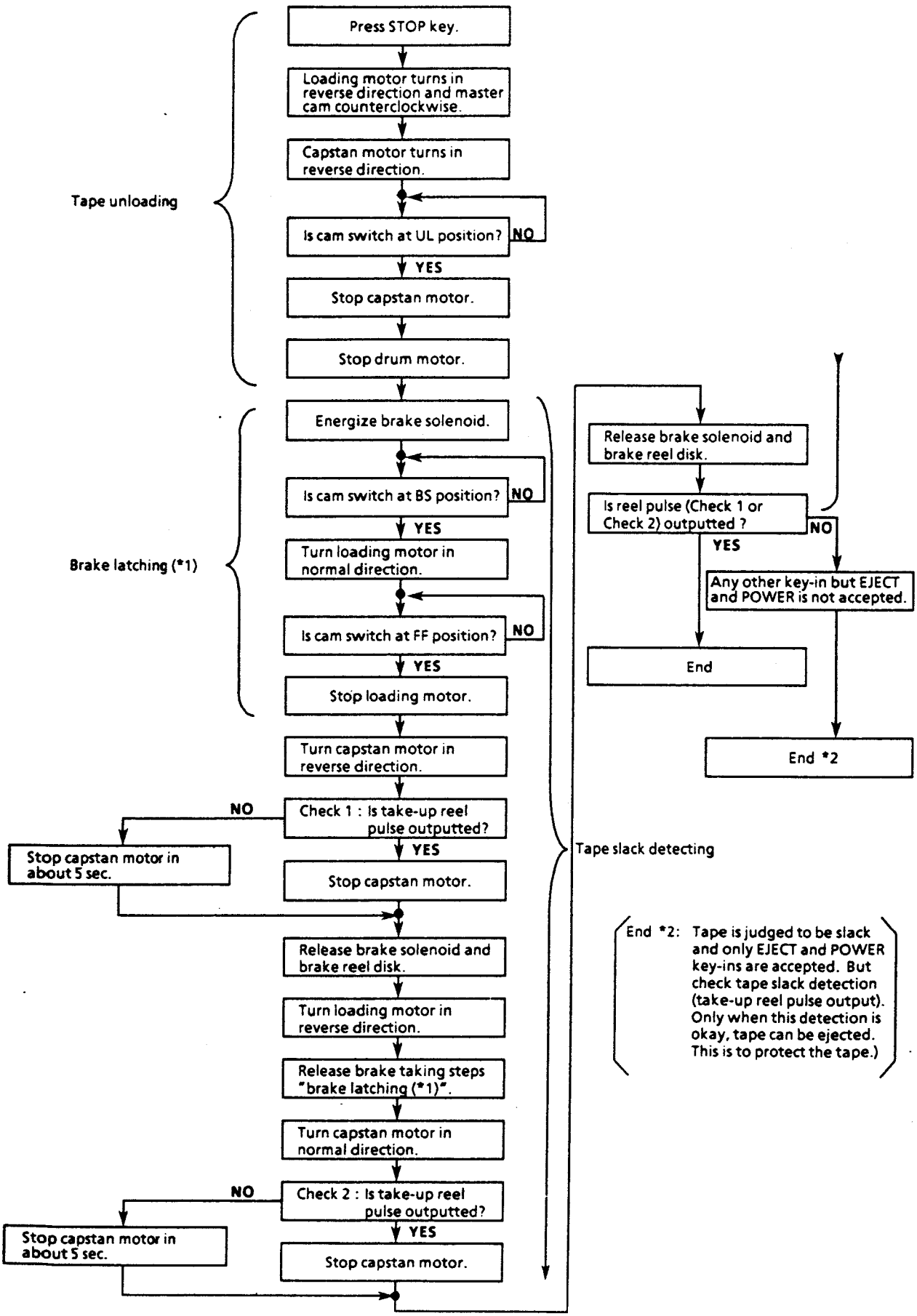
PLAY → VSR



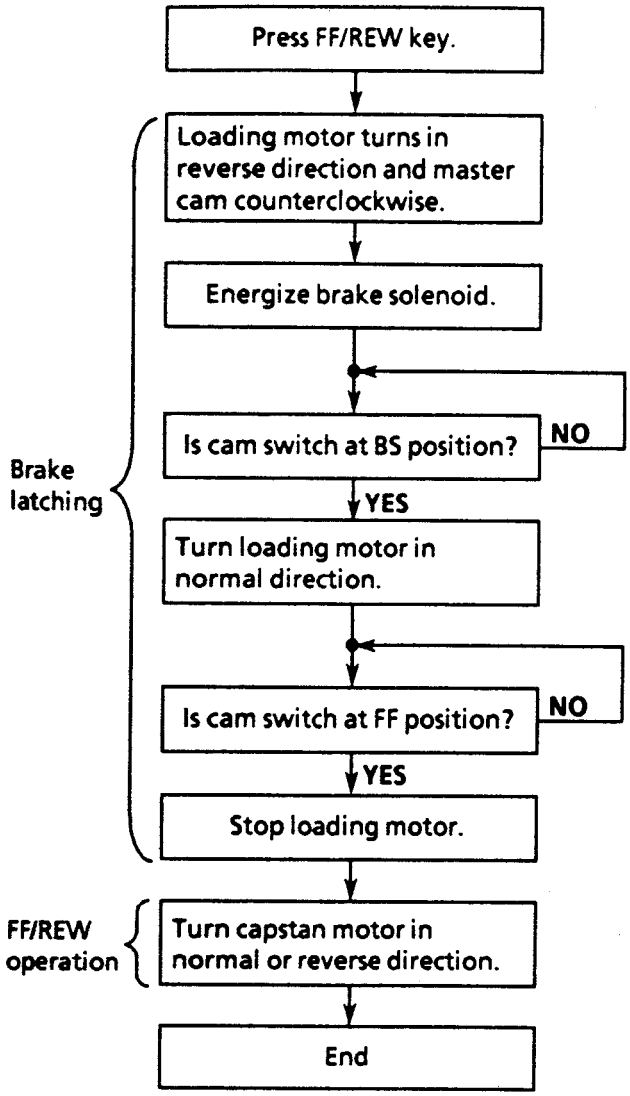
VSR → PLAY



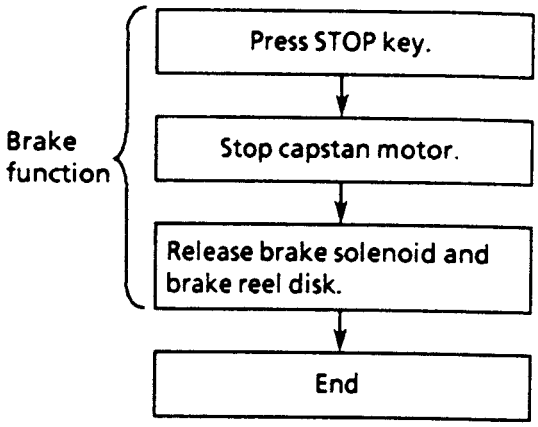
STOP/PLAY → STOP


Press STOP key.
Loading motor turns in reverse direction and master cam counterclockwise.
Capstan motor turns in reverse direction.
Tape unloading
Is cam switch at UL position?
NO
YES
Stop capstan motor.
Stop drum motor.
Energize brake solenoid.
Is cam switch at BS position?
NO
YES
Turn loading motor in normal direction.
Brake latching (*1)
Is cam switch at FF position?
NO
YES
Stop loading motor.
Turn capstan motor in reverse direction.
NO
Check 1 : Is take-up reel pulse outputted?
YES
Stop capstan motor in about 5 sec.
Stop capstan motor.
Release brake solenoid and brake reel disk.
Turn loading motor in reverse direction.
Release brake taking steps "brake latching (*1)".
Turn capstan motor in normal direction.
NO
Check 2 : Is take-up reel pulse outputted?
YES
Stop capstan motor in about 5 sec.
Stop capstan motor.
Release brake solenoid and brake reel disk.
Is reel pulse (Check 1 or Check 2) outputted ?
NO
YES
Any other key-in but EJECT and POWER is not accepted.
End
End *2
Tape slack detecting
End *2: Tape is judged to be slack and only EJECT and POWER key-ins are accepted. But check tape slack detection (take-up reel pulse output). Only when this detection is okay, tape can be ejected. This is to protect the tape.)

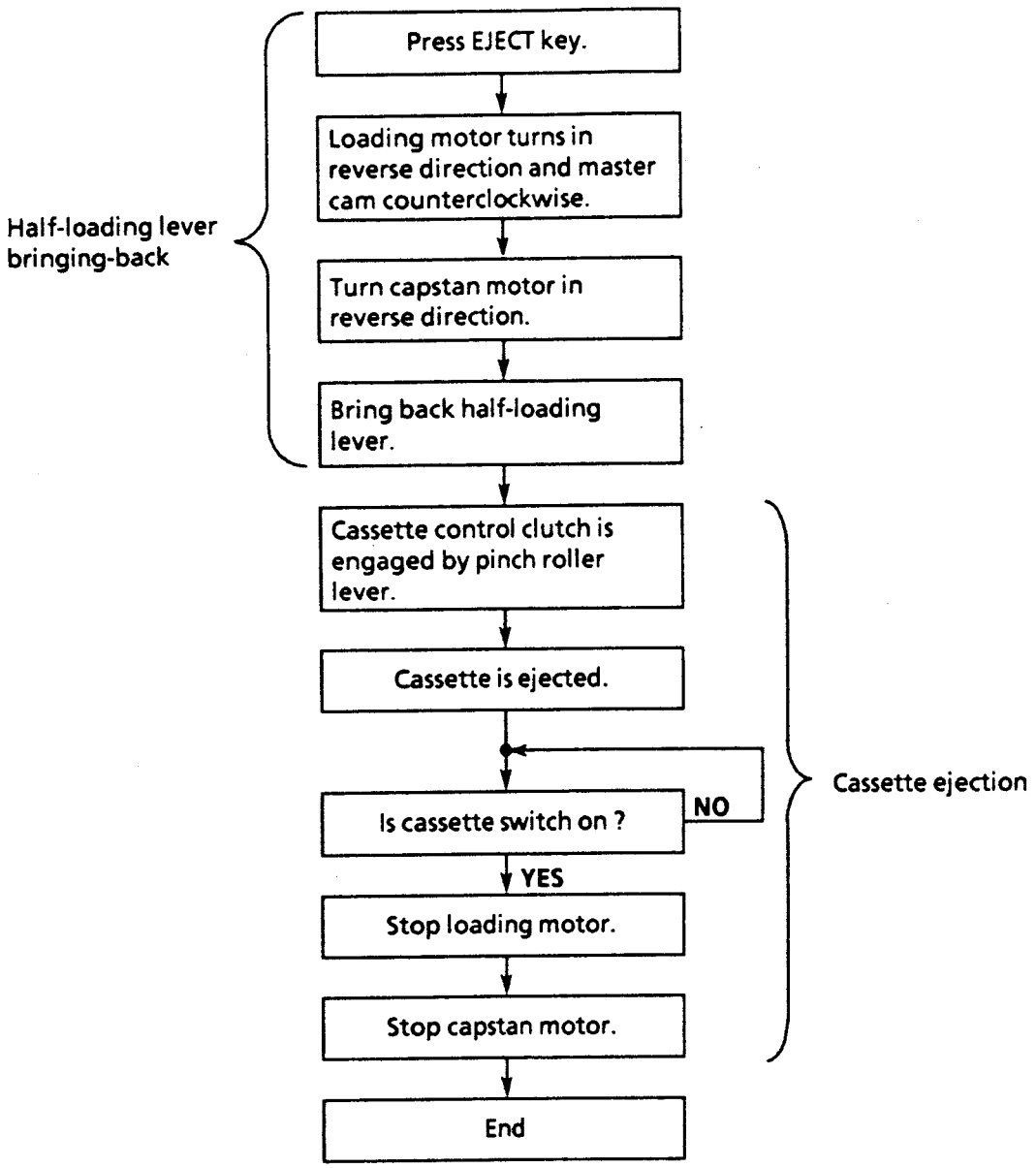
STOP → FF/REW



FF/REW → STOP



STOP → CASSETTE EJECT



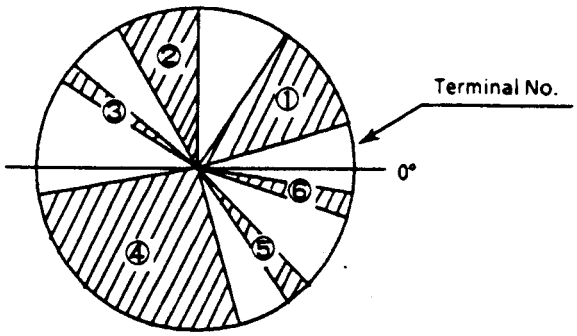


Fig. 3-1 Cam switch pattern

* The cam switch has the pattern as shown in Fig. 3-1. The circuit turns on when the signal comes on the shaded zones on the switch. The six pattern signals are judged to be on or off by the system controller in order to detect the mechanism modes.

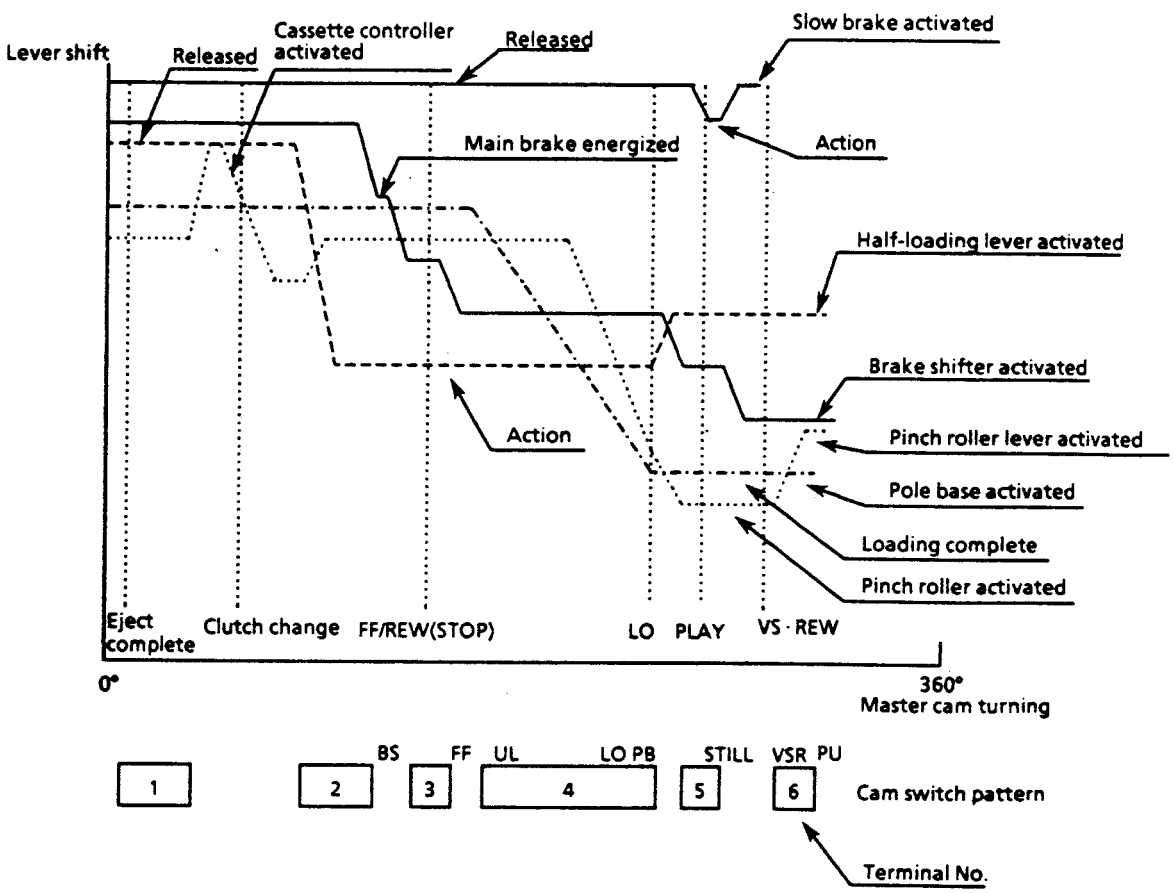
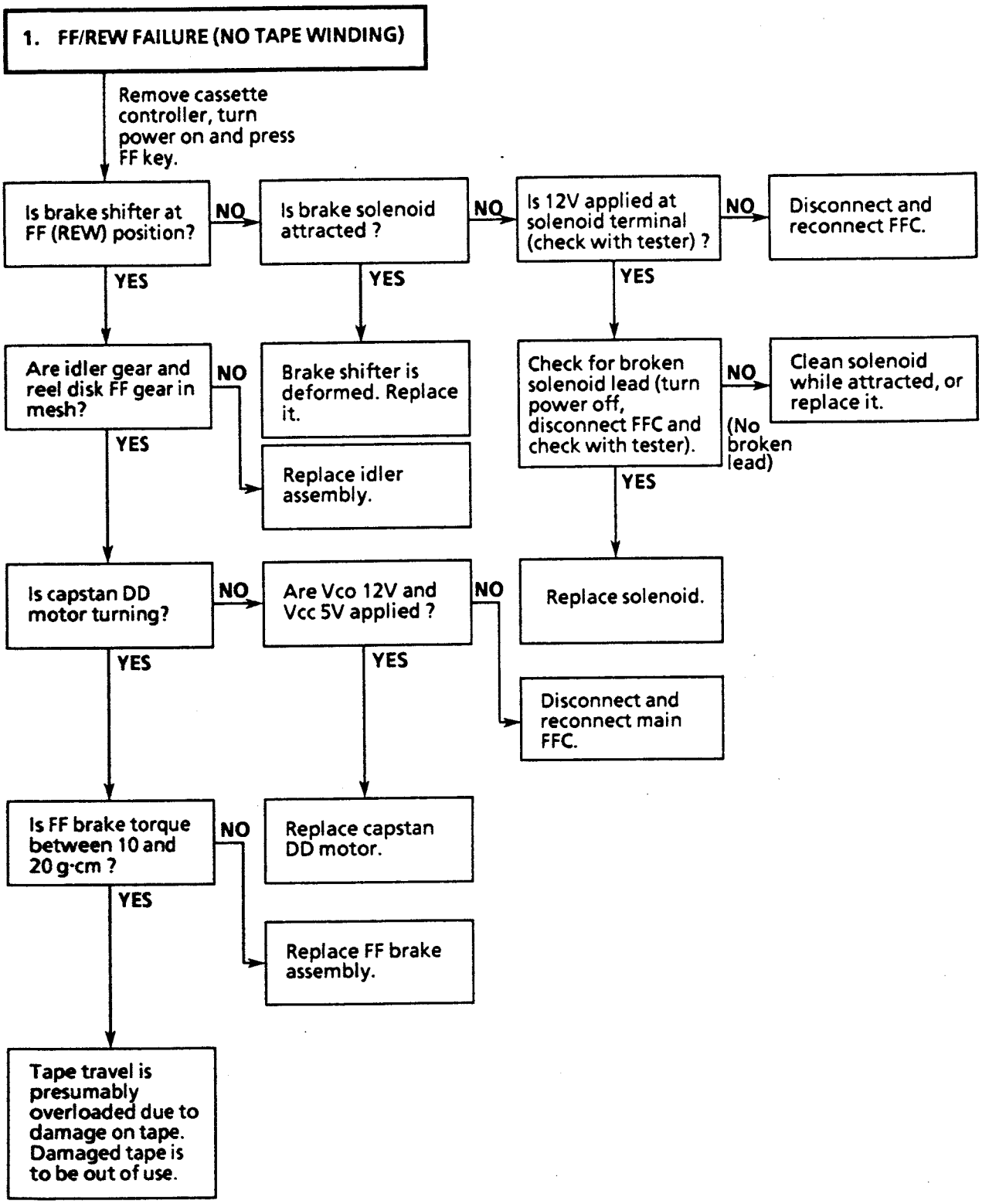


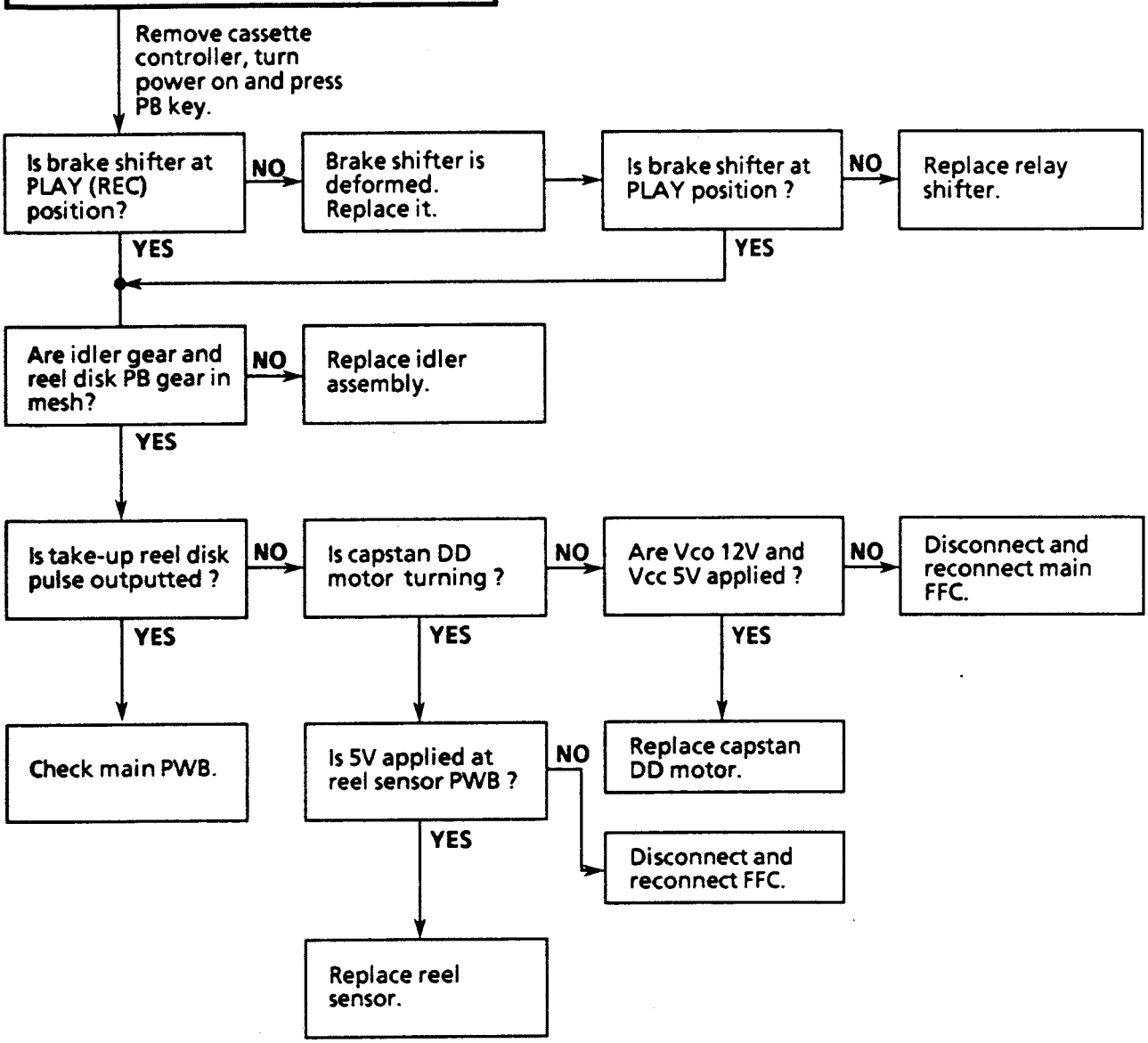
Fig. 3-2 Relationship between cam switch positions and mechanism movement

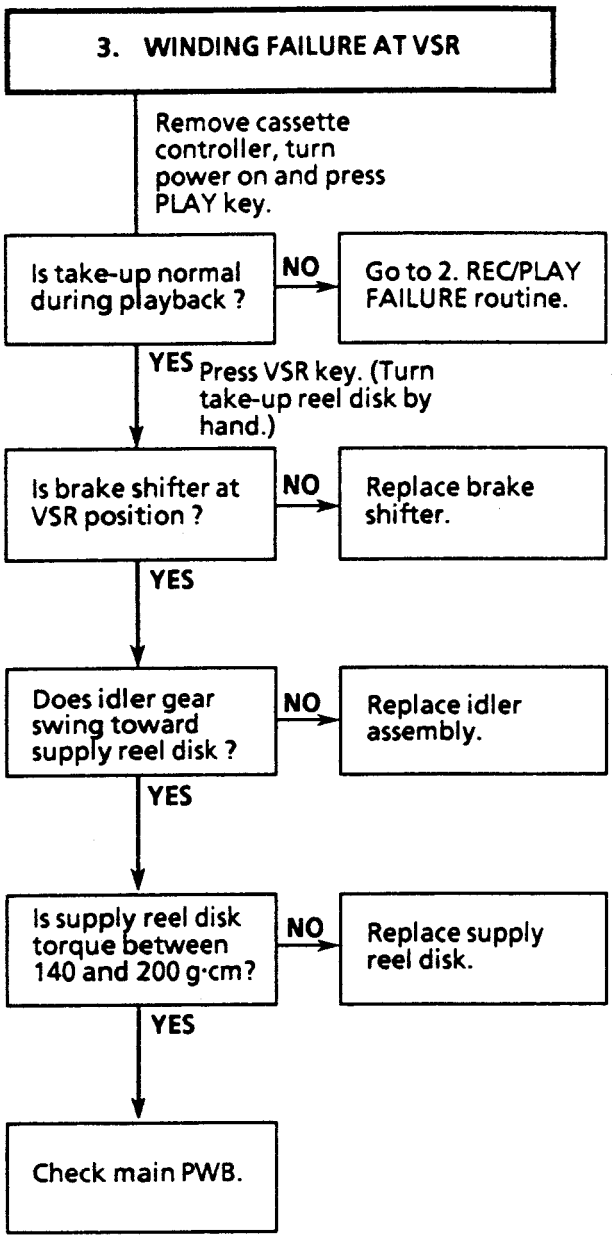
The relationship between the cam switch positions and the mechanism movement is shown in Fig. 3-2.

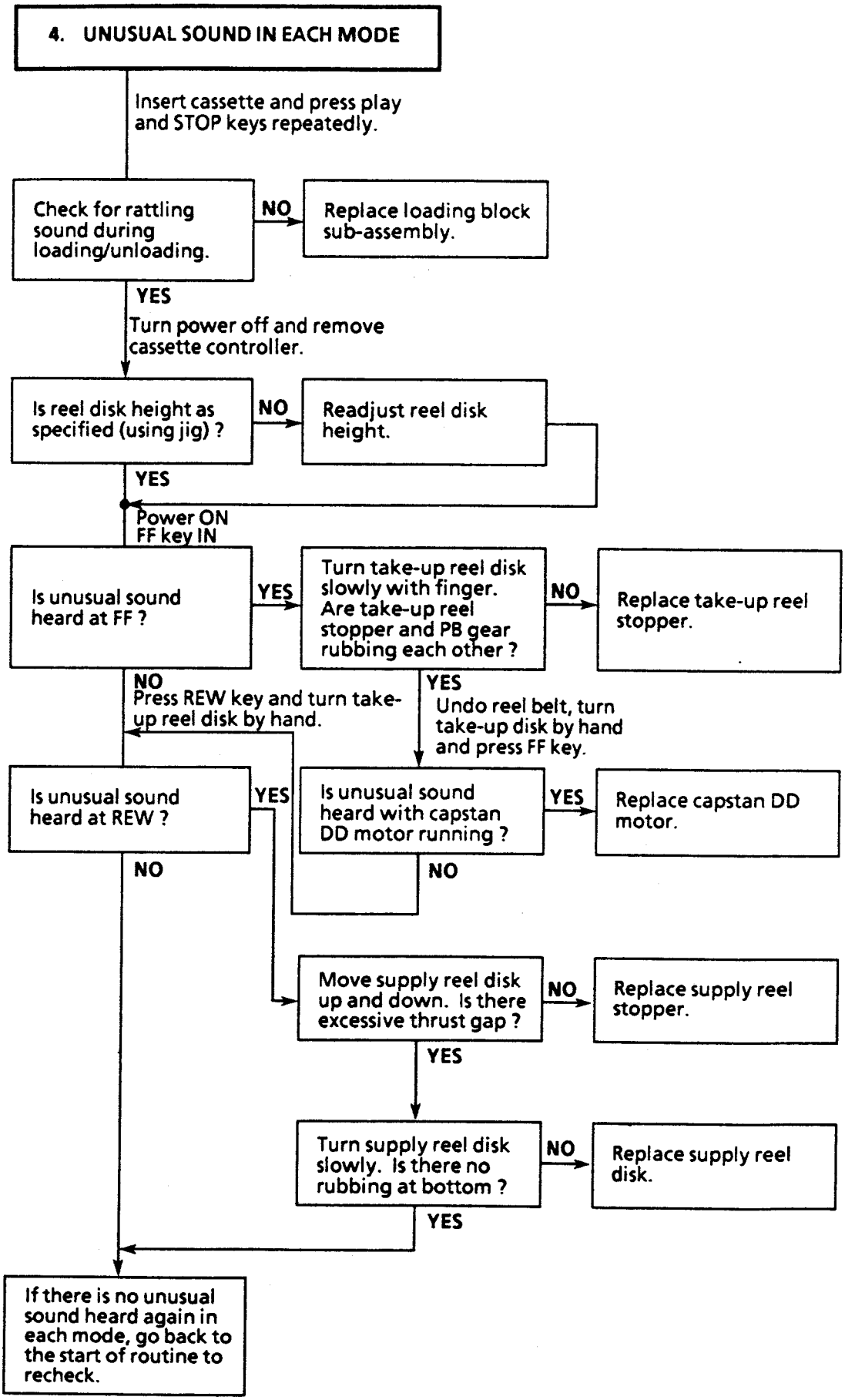
MECHANISM TROUBLESHOOTING


1. FF/REW FAILURE (NO TAPE WINDING)
Remove cassette controller, turn power on and press FF key.
Is brake shifter at FF (REW) position?
NO
Is brake solenoid attracted ?
NO
Is 12V applied at solenoid terminal (check with tester) ?
NO
Disconnect and reconnect FFC.
YES
YES
YES
Are idler gear and reel disk FF gear in mesh?
NO
Brake shifter is deformed. Replace it.
Replace idler assembly.
YES
Check for broken solenoid lead (turn power off, disconnect FFC and check with tester).
NO
Clean solenoid while attracted, or replace it.
(No broken lead)
YES
Is capstan DD motor turning?
NO
Are Vco 12V and Vcc 5V applied ?
NO
Replace solenoid.
YES
YES
Disconnect and reconnect main FFC.
Is FF brake torque between 10 and 20 g·cm ?
NO
Replace capstan DD motor.
YES
Replace FF brake assembly.
Tape travel is presumably overloaded due to damage on tape. Damaged tape is to be out of use.

2. REC/PLAY FAILURE (MODE RELEASE)

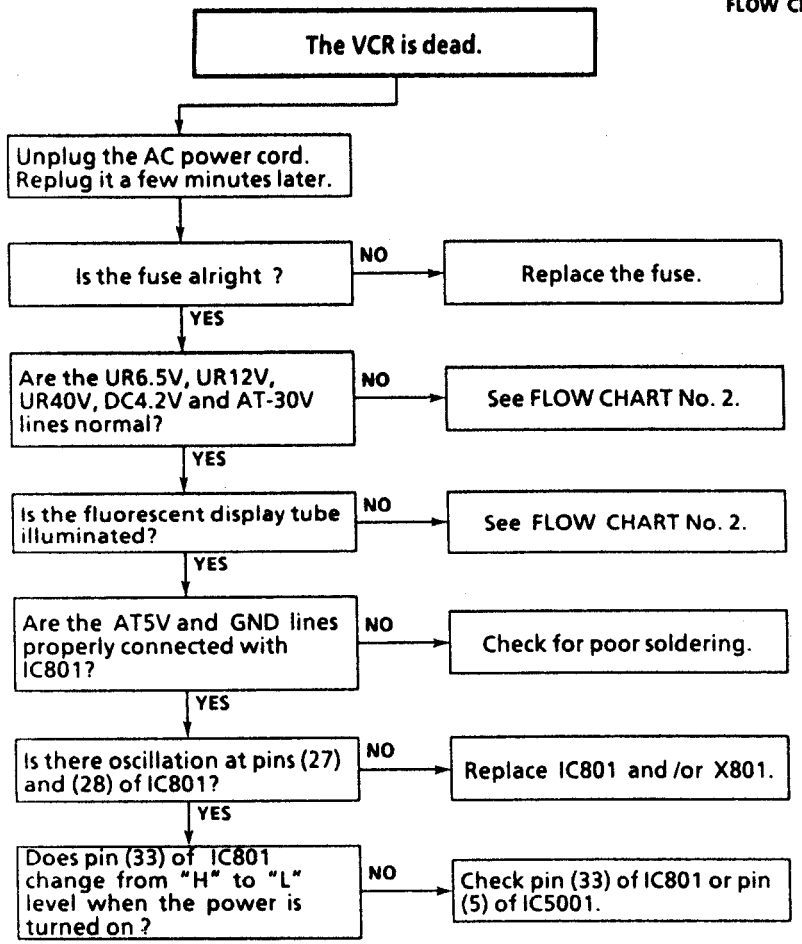



3. WINDING FAILURE AT VSR
Remove cassette controller, turn power on and press PLAY key.
Is take-up normal during playback ?
NO
Go to 2. REC/PLAY FAILURE routine.
YES
Press VSR key. (Turn take-up reel disk by hand.)
Is brake shifter at VSR position ?
NO
Replace brake shifter.
YES
Does idler gear swing toward supply reel disk ?
NO
Replace idler assembly.
YES
Is supply reel disk torque between 140 and 200 g·cm?
NO
Replace supply reel disk.
YES
Check main PWB.


4. UNUSUAL SOUND IN EACH MODE
Insert cassette and press play and STOP keys repeatedly.
Check for rattling sound during loading/unloading.
NO
Replace loading block sub-assembly.
YES
Turn power off and remove cassette controller.
Is reel disk height as specified (using jig) ?
NO
Readjust reel disk height.
YES
Power ON
FF key IN
Is unusual sound heard at FF ?
YES
Turn take-up reel disk slowly with finger. Are take-up reel stopper and PB gear rubbing each other ?
NO
Replace take-up reel stopper.
NO
Press REW key and turn take-up reel disk by hand.
YES
Undo reel belt, turn take-up disk by hand and press FF key.
Is unusual sound heard at REW ?
YES
Is unusual sound heard with capstan DD motor running ?
YES
Replace capstan DD motor.
NO
NO
Move supply reel disk up and down. Is there excessive thrust gap ?
NO
Replace supply reel stopper.
YES
Turn supply reel disk slowly. Is there no rubbing at bottom ?
NO
Replace supply reel disk.
YES
If there is no unusual sound heard again in each mode, go back to the start of routine to recheck.

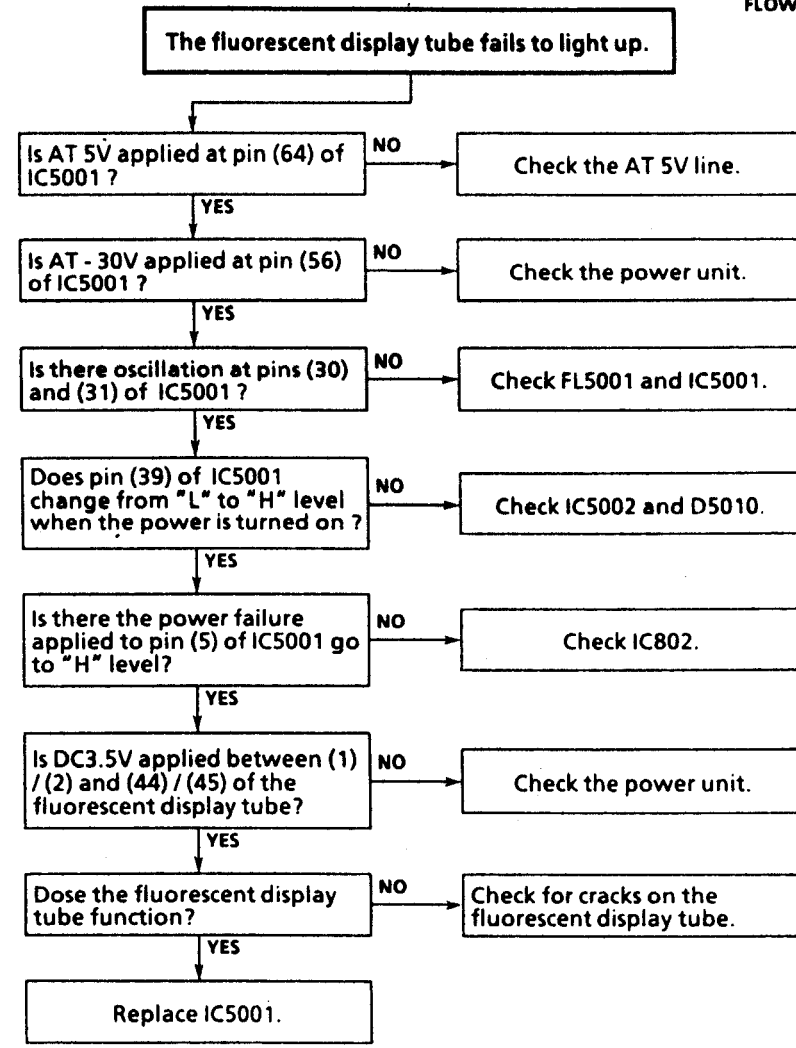
POWER TROUBLESHOOTING

FLOW CHART NO. 1


The VCR is dead.
Unplug the AC power cord. Replug it a few minutes later.
Is the fuse alright ?
NO
Replace the fuse.
YES
Are the UR6.5V, UR12V, UR40V, DC4.2V and AT-30V lines normal?
NO
See FLOW CHART No. 2.
YES
Is the fluorescent display tube illuminated?
NO
See FLOW CHART No. 2.
YES
Are the AT5V and GND lines properly connected with IC801?
NO
Check for poor soldering.
YES
Is there oscillation at pins (27) and (28) of IC801?
NO
Replace IC801 and /or X801.
YES
Does pin (33) of IC801 change from "H" to "L" level when the power is turned on ?
NO
Check pin (33) of IC801 or pin (5) of IC5001.

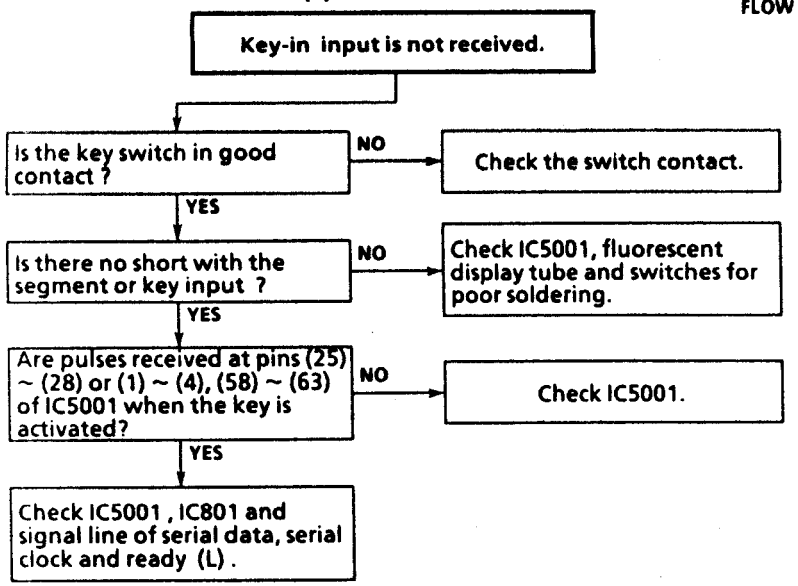
TIMER (1) TROUBLESHOOTING

FLOW CHART NO. 2


The fluorescent display tube fails to light up.
Is AT 5V applied at pin (64) of IC5001 ?
NO
Check the AT 5V line.
YES
Is AT - 30V applied at pin (56) of IC5001 ?
NO
Check the power unit.
YES
Is there oscillation at pins (30) and (31) of IC5001 ?
NO
Check FL5001 and IC5001.
YES
Does pin (39) of IC5001 change from "L" to "H" level when the power is turned on ?
NO
Check IC5002 and D5010.
YES
Is there the power failure applied to pin (5) of IC5001 go to "H" level?
NO
Check IC802.
YES
Is DC3.5V applied between (1) / (2) and (44) / (45) of the fluorescent display tube?
NO
Check the power unit.
YES
Dose the fluorescent display tube function?
NO
Check for cracks on the fluorescent display tube.
YES
Replace IC5001.

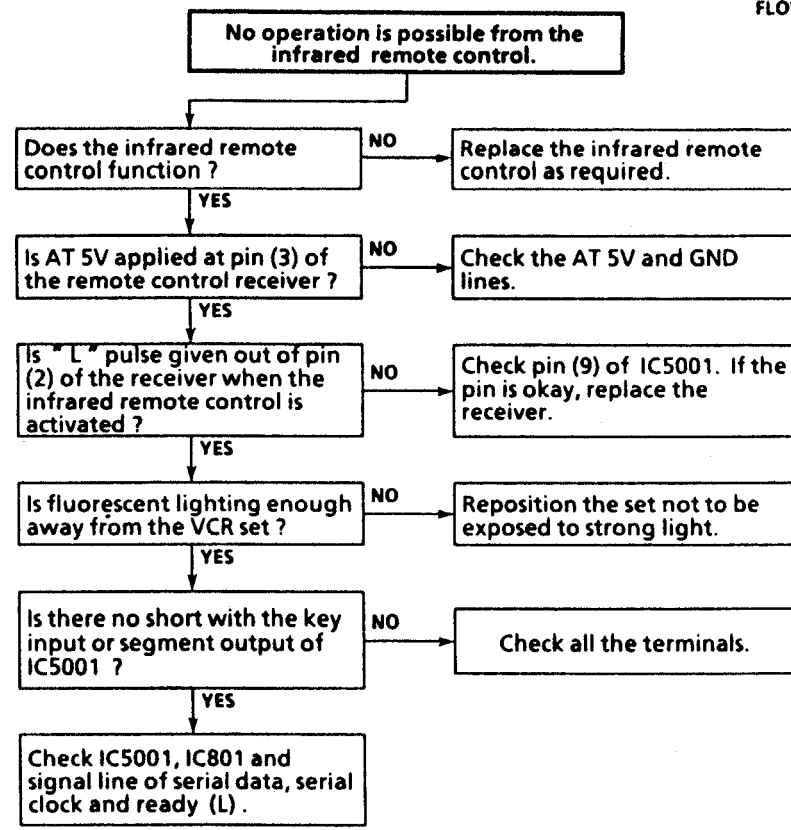
TIMER (2) TROUBLESHOOTING

FLOW CHART NO. 3


Key-in input is not received.
Is the key switch in good contact ?
NO
Check the switch contact.
YES
Is there no short with the segment or key input ?
NO
Check IC5001, fluorescent display tube and switches for poor soldering.
YES
Are pulses received at pins (25) ~ (28) or (1) ~ (4), (58) ~ (63) of IC5001 when the key is activated?
NO
Check IC5001.
YES
Check IC5001 , IC801 and signal line of serial data, serial clock and ready (L) .

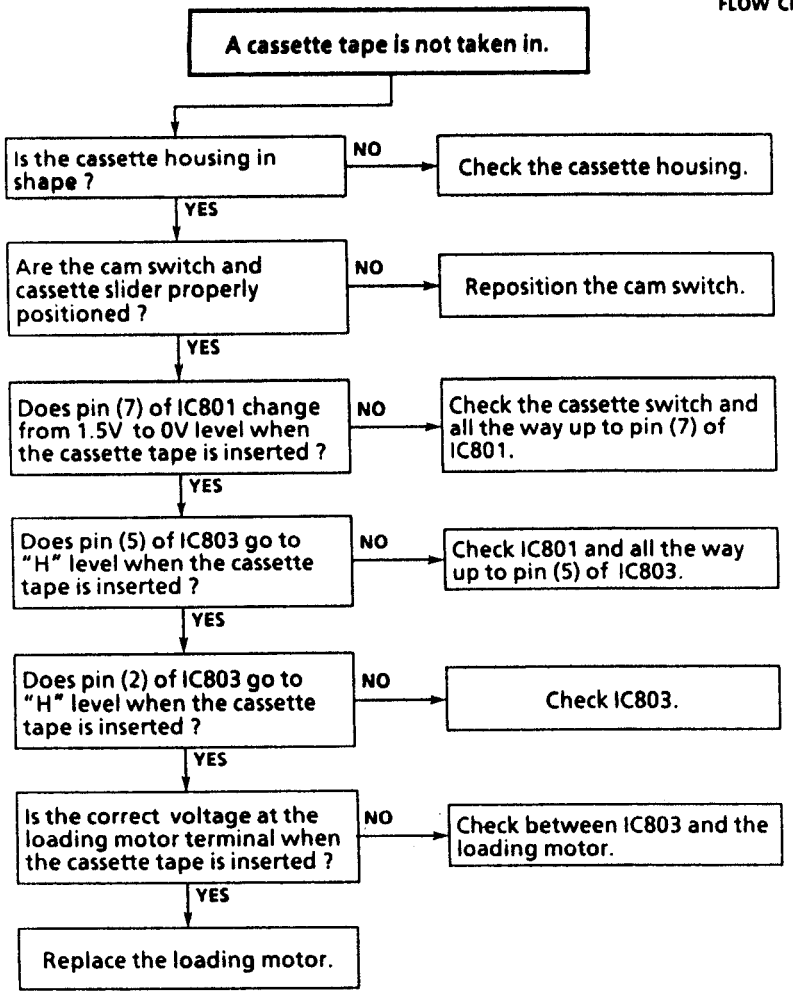
INFRARED R/C TROUBLESHOOTING

FLOW CHART NO. 4


No operation is possible from the infrared remote control.
Does the infrared remote control function ?
NO
Replace the infrared remote control as required.
YES
Is AT 5V applied at pin (3) of the remote control receiver ?
NO
Check the AT 5V and GND lines.
YES
Is " L " pulse given out of pin (2) of the receiver when the infrared remote control is activated ?
NO
Check pin (9) of IC5001. If the pin is okay, replace the receiver.
YES
Is fluorescent lighting enough away from the VCR set ?
NO
Reposition the set not to be exposed to strong light.
YES
Is there no short with the key input or segment output of IC5001 ?
NO
Check all the terminals.
YES
Check IC5001, IC801 and signal line of serial data, serial clock and ready (L) .

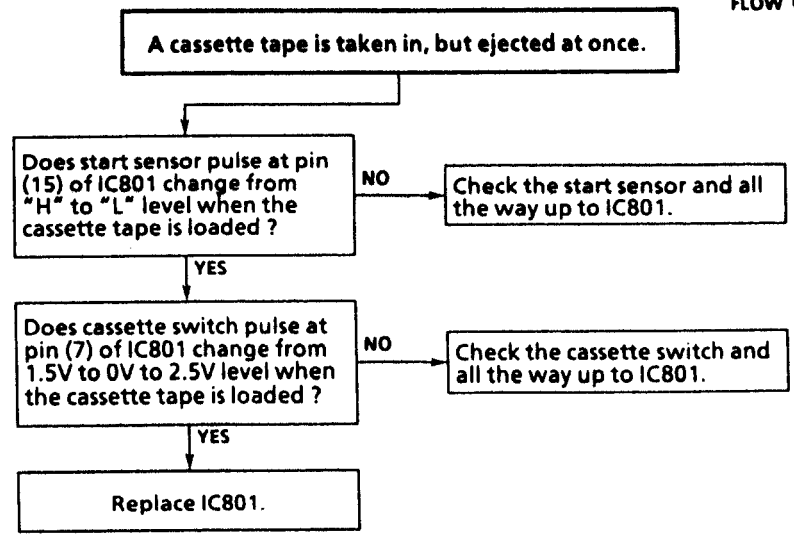
CASSETTE CONTROL TROUBLESHOOTING

FLOW CHART NO. 5


A cassette tape is not taken in.
Is the cassette housing in shape ?
NO
Check the cassette housing.
YES
Are the cam switch and cassette slider properly positioned ?
NO
Reposition the cam switch.
YES
Does pin (7) of IC801 change from 1.5V to 0V level when the cassette tape is inserted ?
NO
Check the cassette switch and all the way up to pin (7) of IC801.
YES
Does pin (5) of IC803 go to "H" level when the cassette tape is inserted ?
NO
Check IC801 and all the way up to pin (5) of IC803.
YES
Does pin (2) of IC803 go to "H" level when the cassette tape is inserted ?
NO
Check IC803.
YES
Is the correct voltage at the loading motor terminal when the cassette tape is inserted ?
NO
Check between IC803 and the loading motor.
YES
Replace the loading motor.

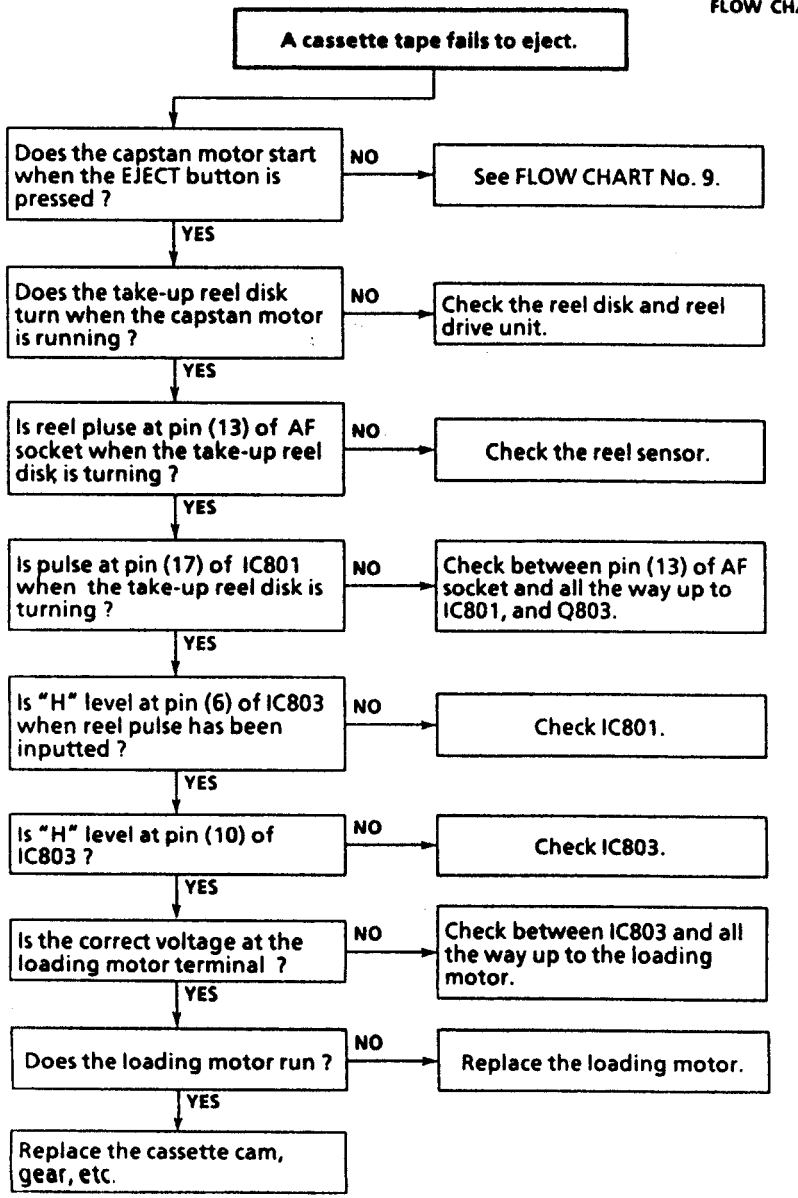
CASSETTE CONTROL TROUBLESHOOTING

FLOW CHART NO. 6


A cassette tape is taken in, but ejected at once.
Does start sensor pulse at pin (15) of IC801 change from "H" to "L" level when the cassette tape is loaded ?
NO
Check the start sensor and all the way up to IC801.
YES
Does cassette switch pulse at pin (7) of IC801 change from 1.5V to 0V to 2.5V level when the cassette tape is loaded ?
NO
Check the cassette switch and all the way up to IC801.
YES
Replace IC801.

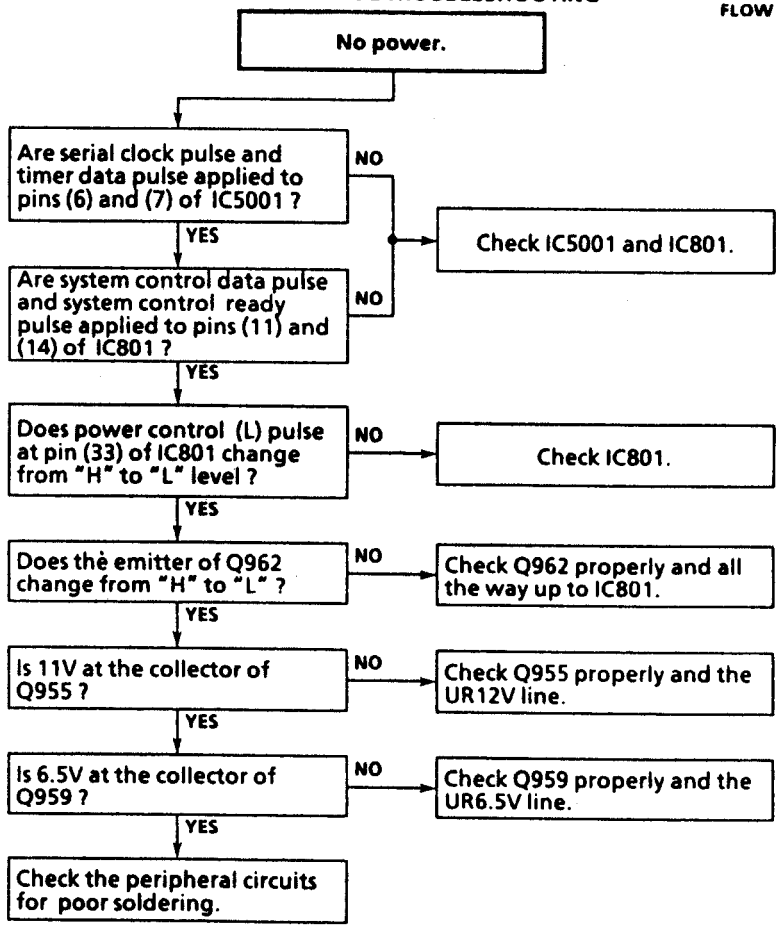
LOADING MOTOR AND EJECT TROUBLESHOOTING

FLOW CHART NO. 7


A cassette tape fails to eject.
Does the capstan motor start when the EJECT button is pressed ?
NO
See FLOW CHART No. 9.
YES
Does the take-up reel disk turn when the capstan motor is running ?
NO
Check the reel disk and reel drive unit.
YES
Is reel pluse at pin (13) of AF socket when the take-up reel disk is turning ?
NO
Check the reel sensor.
YES
Is pulse at pin (17) of IC801 when the take-up reel disk is turning ?
NO
Check between pin (13) of AF socket and all the way up to IC801, and Q803.
YES
Is "H" level at pin (6) of IC803 when reel pulse has been inputted ?
NO
Check IC801.
YES
Is "H" level at pin (10) of IC803 ?
NO
Check IC803.
YES
Is the correct voltage at the loading motor terminal ?
NO
Check between IC803 and all the way up to the loading motor.
YES
Does the loading motor run ?
NO
Replace the loading motor.
YES
Replace the cassette cam, gear, etc.

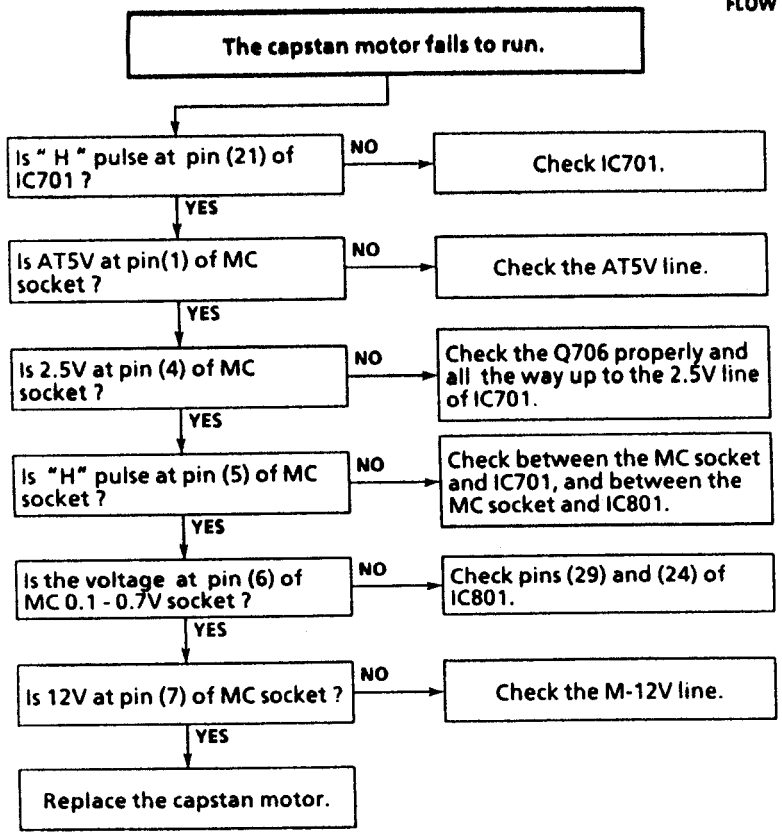
SYSTEM CONTROL TROUBLESHOOTING

FLOW CHART NO. 8


No power.
Are serial clock pulse and timer data pulse applied to pins (6) and (7) of IC5001 ?
NO
Check IC5001 and IC801.
YES
Are system control data pulse and system control ready pulse applied to pins (11) and (14) of IC801 ?
NO
YES
Does power control (L) pulse at pin (33) of IC801 change from "H" to "L" level ?
NO
Check IC801.
YES
Does the emitter of Q962 change from "H" to "L" ?
NO
Check Q962 properly and all the way up to IC801.
YES
Is 11V at the collector of Q955 ?
NO
Check Q955 properly and the UR12V line.
YES
Is 6.5V at the collector of Q959 ?
NO
Check Q959 properly and the UR6.5V line.
YES
Check the peripheral circuits for poor soldering.

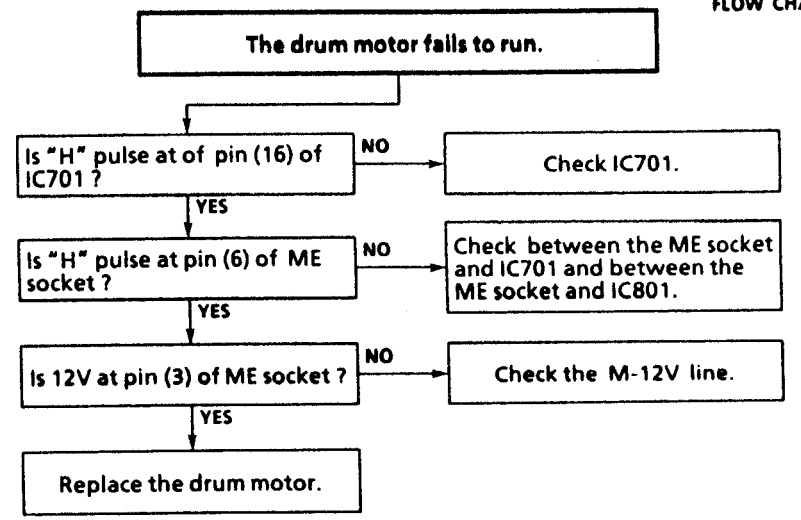
CAPSTAN MOTOR TROUBLESHOOTING

FLOW CHART NO. 9

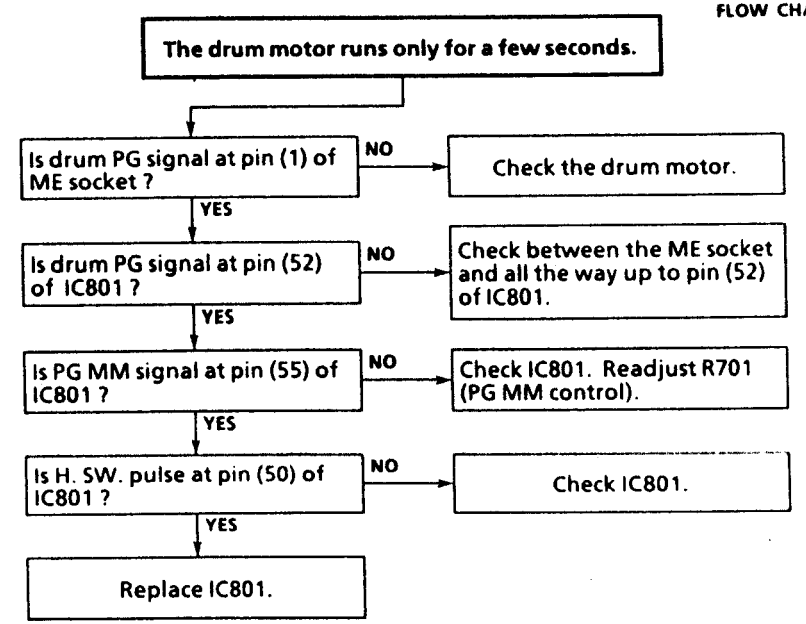

The capstan motor fails to run.
Is " H " pulse at pin (21) of IC701 ?
NO
Check IC701.
YES
Is AT5V at pin(1) of MC socket ?
NO
Check the AT5V line.
YES
Is 2.5V at pin (4) of MC socket ?
NO
Check the Q706 properly and all the way up to the 2.5V line of IC701.
YES
Is "H" pulse at pin (5) of MC socket ?
NO
Check between the MC socket and IC701, and between the MC socket and IC801.
YES
Is the voltage at pin (6) of MC 0.1 - 0.7V socket ?
NO
Check pins (29) and (24) of IC801.
YES
Is 12V at pin (7) of MC socket ?
NO
Check the M-12V line.
YES
Replace the capstan motor.

DRUM MOTOR TROUBLESHOOTING

FLOW CHART NO. 10

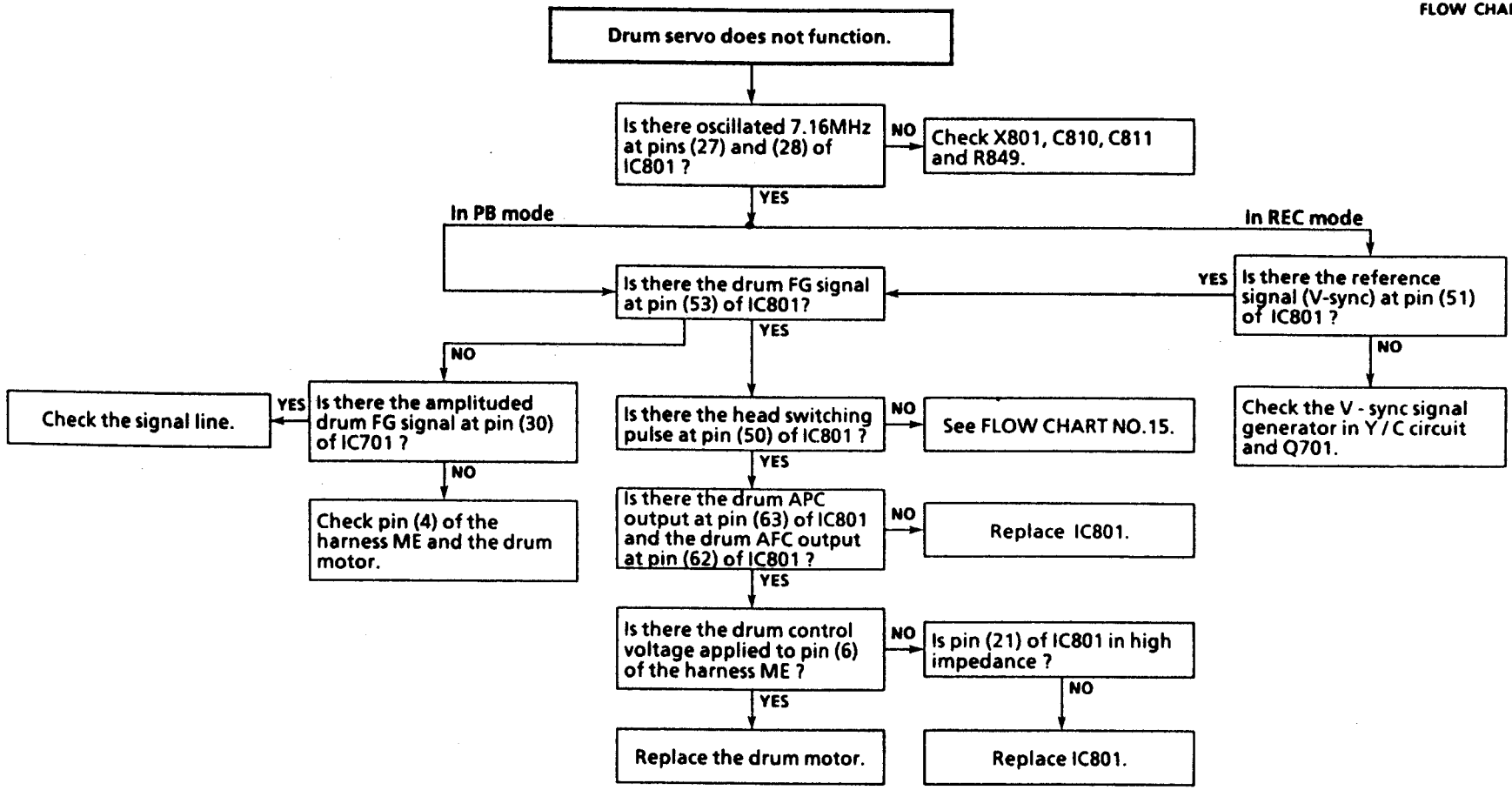

The drum motor fails to run.
Is "H" pulse at of pin (16) of IC701 ?
NO
Check IC701.
YES
Is "H" pulse at pin (6) of ME socket ?
NO
Check between the ME socket and IC701 and between the ME socket and IC801.
YES
Is 12V at pin (3) of ME socket ?
NO
Check the M-12V line.
YES
Replace the drum motor.

FLOW CHART NO. 11


The drum motor runs only for a few seconds.
Is drum PG signal at pin (1) of ME socket ?
NO
Check the drum motor.
YES
Is drum PG signal at pin (52) of IC801 ?
NO
Check between the ME socket and all the way up to pin (52) of IC801.
YES
Is PG MM signal at pin (55) of IC801 ?
NO
Check IC801. Readjust R701 (PG MM control).
YES
Is H. SW. pulse at pin (50) of IC801 ?
NO
Check IC801.
YES
Replace IC801.

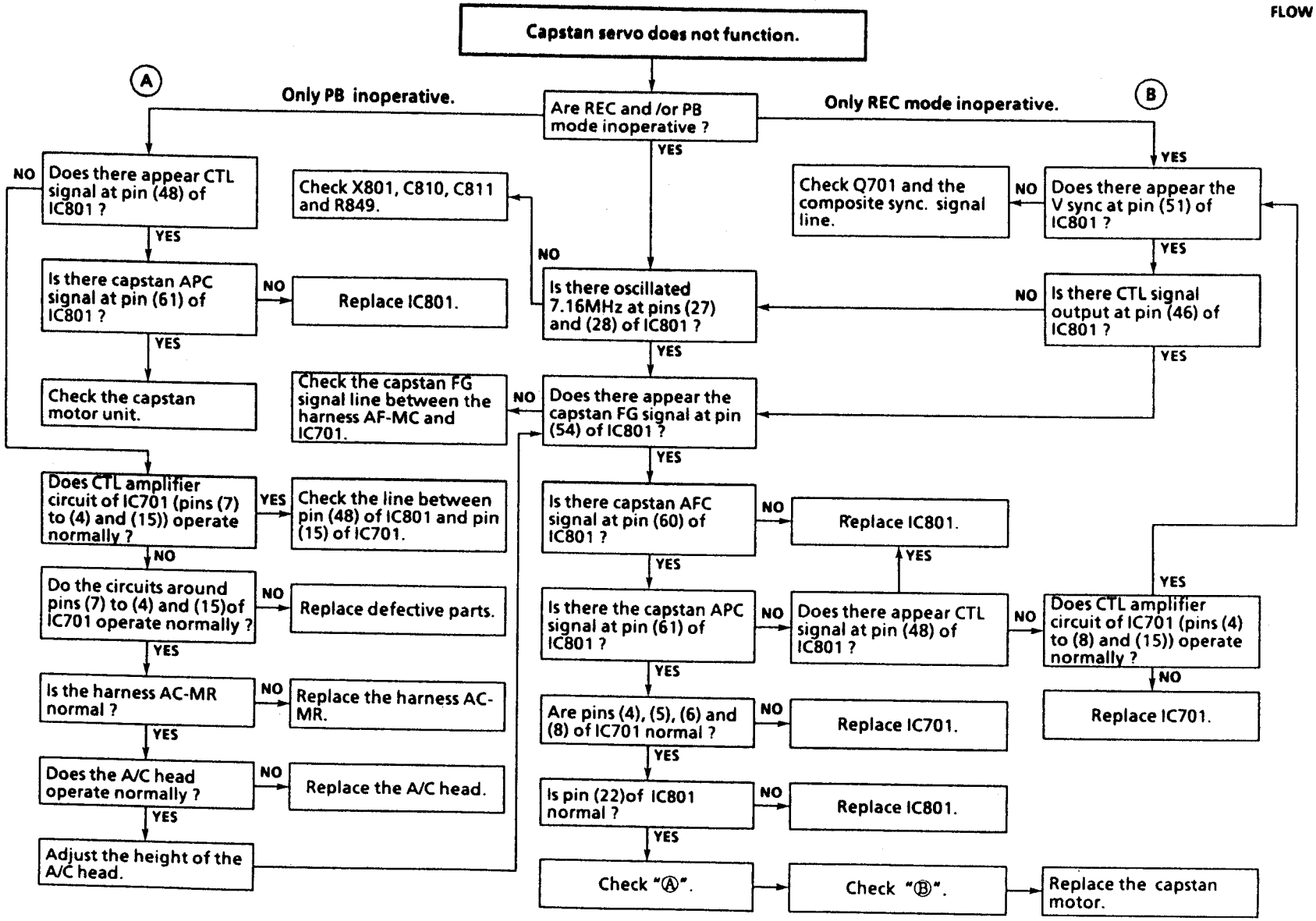
DRUM SERVO TROUBLESHOOTING

FLOW CHART NO. 12


Drum servo does not function.
Is there oscillated 7.16MHz at pins (27) and (28) of IC801 ?
NO
Check X801, C810, C811 and R849.
YES
In PB mode
In REC mode
Is there the drum FG signal at pin (53) of IC801?
YES
Is there the reference signal (V-sync) at pin (51) of IC801 ?
NO
Check the V - sync signal generator in Y / C circuit and Q701.
NO
Is there the amplituded drum FG signal at pin (30) of IC701 ?
YES
Check the signal line.
NO
Check pin (4) of the harness ME and the drum motor.
Is there the head switching pulse at pin (50) of IC801 ?
NO
See FLOW CHART NO.15.
YES
Is there the drum APC output at pin (63) of IC801 and the drum AFC output at pin (62) of IC801 ?
NO
Replace IC801.
YES
Is there the drum control voltage applied to pin (6) of the harness ME ?
NO
Is pin (21) of IC801 in high impedance ?
NO
Replace IC801.
YES
Replace the drum motor.

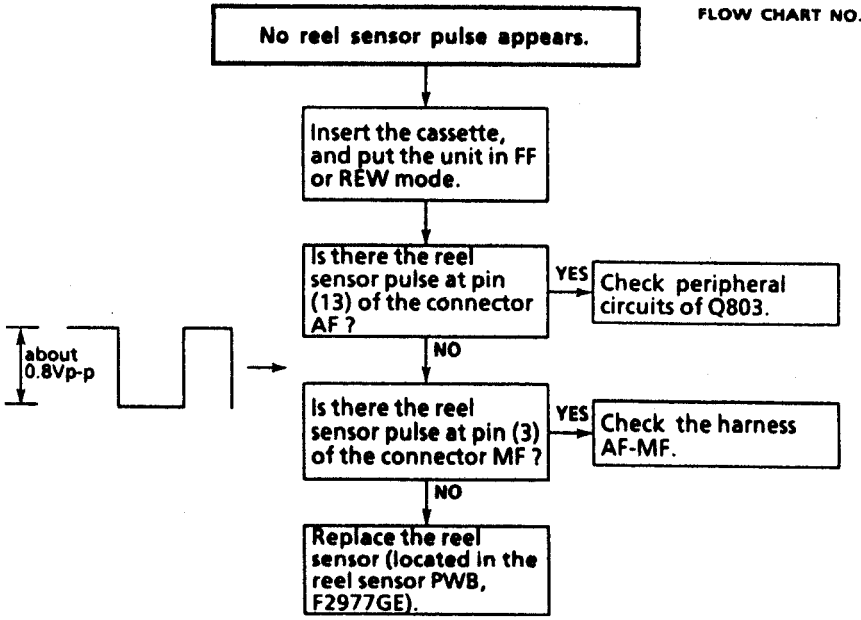
FLOW CHART NO. 13

CAPSTAN SERVO TROUBLESHOOTING


Capstan servo does not function.
Are REC and /or PB mode inoperative ?
Only PB inoperative.
Only REC mode inoperative.
A
B
YES
NO
Does there appear CTL signal at pin (48) of IC801 ?
Check X801, C810, C811 and R849.
Is there capstan APC signal at pin (61) of IC801 ?
Replace IC801.
Check the capstan motor unit.
Is there oscillated 7.16MHz at pins (27) and (28) of IC801 ?
Check the capstan FG signal line between the harness AF-MC and IC701.
Does there appear the capstan FG signal at pin (54) of IC801 ?
Does CTL amplifier circuit of IC701 (pins (7) to (4) and (15)) operate normally ?
Check the line between pin (48) of IC801 and pin (15) of IC701.
Do the circuits around pins (7) to (4) and (15)of IC701 operate normally ?
Replace defective parts.
Is the harness AC-MR normal ?
Replace the harness AC-MR.
Does the A/C head operate normally ?
Replace the A/C head.
Adjust the height of the A/C head.
Check Q701 and the composite sync. signal line.
Does there appear the V sync at pin (51) of IC801 ?
Is there CTL signal output at pin (46) of IC801 ?
Is there capstan AFC signal at pin (60) of IC801 ?
Replace IC801.
Is there the capstan APC signal at pin (61) of IC801 ?
Does there appear CTL signal at pin (48) of IC801 ?
Does CTL amplifier circuit of IC701 (pins (4) to (8) and (15)) operate normally ?
Replace IC701.
Are pins (4), (5), (6) and (8) of IC701 normal ?
Replace IC701.
Is pin (22)of IC801 normal ?
Replace IC801.
Check "Ⓐ".
Check "Ⓑ".
Replace the capstan motor.

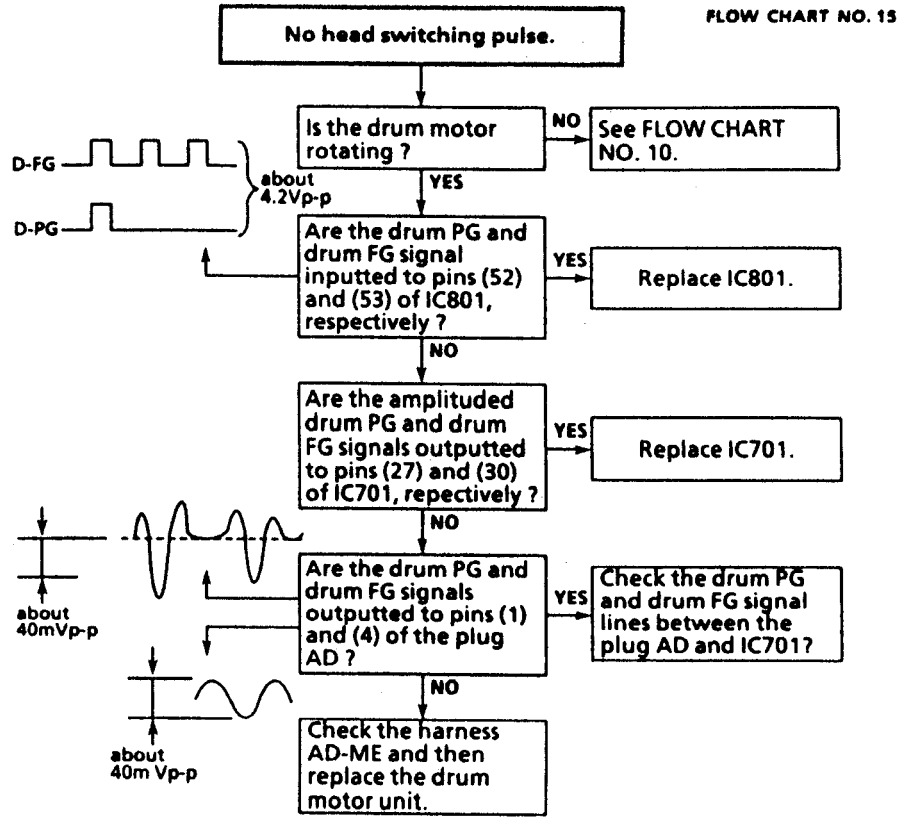
TAKE-UP REEL PULSE GENERATOR TROUBLESHOOTING

FLOW CHART NO. 14


No reel sensor pulse appears.
Insert the cassette, and put the unit in FF or REW mode.
Is there the reel sensor pulse at pin (13) of the connector AF ?
YES
Check peripheral circuits of Q803.
NO
about 0.8Vp-p
Is there the reel sensor pulse at pin (3) of the connector MF ?
YES
Check the harness AF-MF.
NO
Replace the reel sensor (located in the reel sensor PWB, F2977GE).

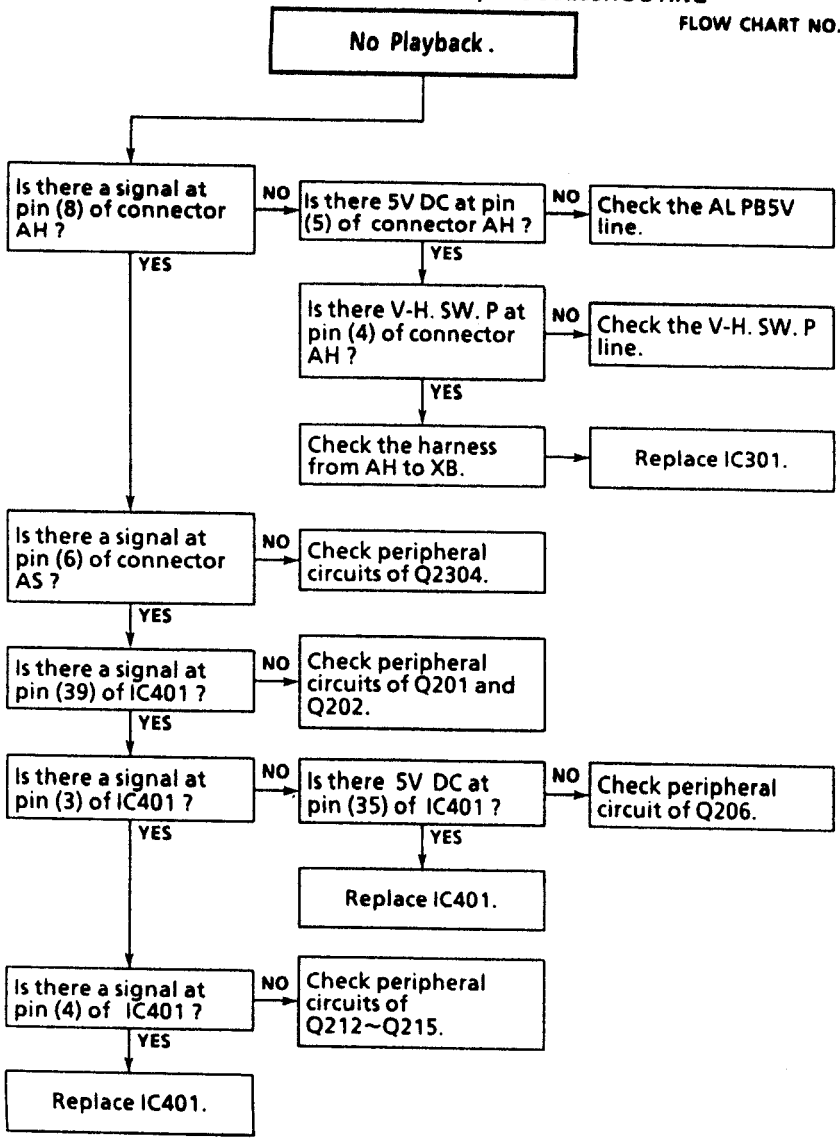
HEAD SWITCHING PULSE TROUBLESHOOTING

FLOW CHART NO. 15


No head switching pulse.
Is the drum motor rotating ?
NO
See FLOW CHART NO. 10.
YES
D-FG
D-PG
about 4.2Vp-p
Are the drum PG and drum FG signal inputted to pins (52) and (53) of IC801, respectively ?
YES
Replace IC801.
NO
Are the amplituded drum PG and drum FG signals outputted to pins (27) and (30) of IC701, repectively ?
YES
Replace IC701.
NO
about 40mVp-p
Are the drum PG and drum FG signals outputted to pins (1) and (4) of the plug AD ?
YES
Check the drum PG and drum FG signal lines between the plug AD and IC701?
NO
about 40m Vp-p
Check the harness AD-ME and then replace the drum motor unit.

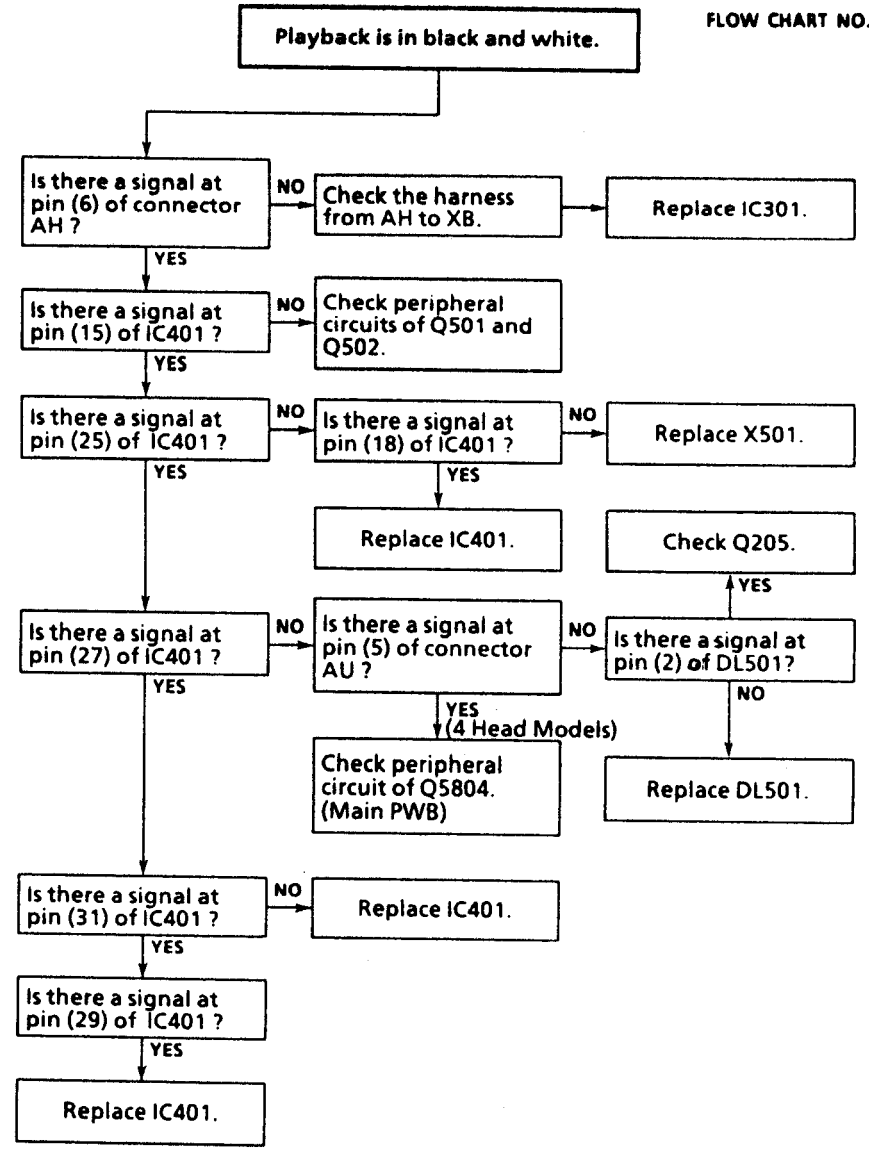
PLAYBACK MODE (LUMINANCE) TROUBLESHOOTING

FLOW CHART NO. 16


No Playback.
Is there a signal at pin (8) of connector AH ?
NO
Is there 5V DC at pin (5) of connector AH ?
NO
Check the AL PB5V line.
YES
Is there V-H. SW. P at pin (4) of connector AH ?
NO
Check the V-H. SW. P line.
YES
Check the harness from AH to XB.
Replace IC301.
YES
Is there a signal at pin (6) of connector AS ?
NO
Check peripheral circuits of Q2304.
YES
Is there a signal at pin (39) of IC401 ?
NO
Check peripheral circuits of Q201 and Q202.
YES
Is there a signal at pin (3) of IC401 ?
NO
Is there 5V DC at pin (35) of IC401 ?
NO
Check peripheral circuit of Q206.
YES
Replace IC401.
YES
Is there a signal at pin (4) of IC401 ?
NO
Check peripheral circuits of Q212~Q215.
YES
Replace IC401.

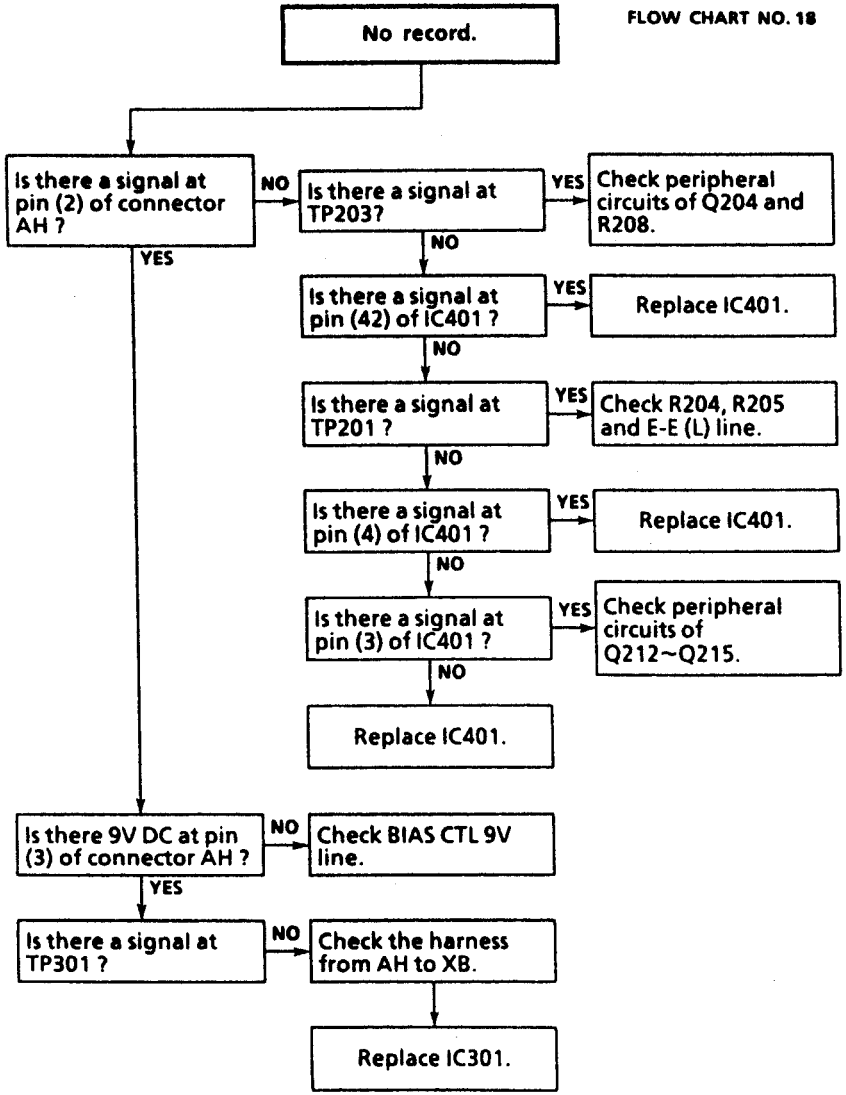
PLAYBACK MODE (CHROMINANCE) TROUBLESHOOTING

FLOW CHART NO. 17


Playback is in black and white.
Is there a signal at pin (6) of connector AH ?
NO
Check the harness from AH to XB.
Replace IC301.
YES
Is there a signal at pin (15) of IC401 ?
NO
Check peripheral circuits of Q501 and Q502.
YES
Is there a signal at pin (25) of IC401 ?
NO
Is there a signal at pin (18) of IC401 ?
NO
Replace X501.
YES
Replace IC401.
Check Q205.
YES
Is there a signal at pin (27) of IC401 ?
NO
Is there a signal at pin (5) of connector AU ?
NO
Is there a signal at pin (2) of DL501?
YES
YES (4 Head Models)
NO
Check peripheral circuit of Q5804. (Main PWB)
Replace DL501.
YES
Is there a signal at pin (31) of IC401 ?
NO
Replace IC401.
YES
Is there a signal at pin (29) of IC401 ?
YES
Replace IC401.

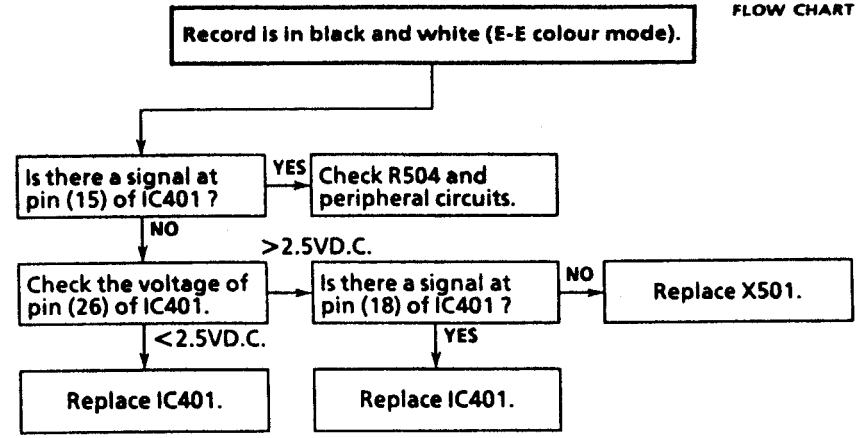
RECORDING MODE (LUMINANCE) TROUBLESHOOTING

FLOW CHART NO. 18



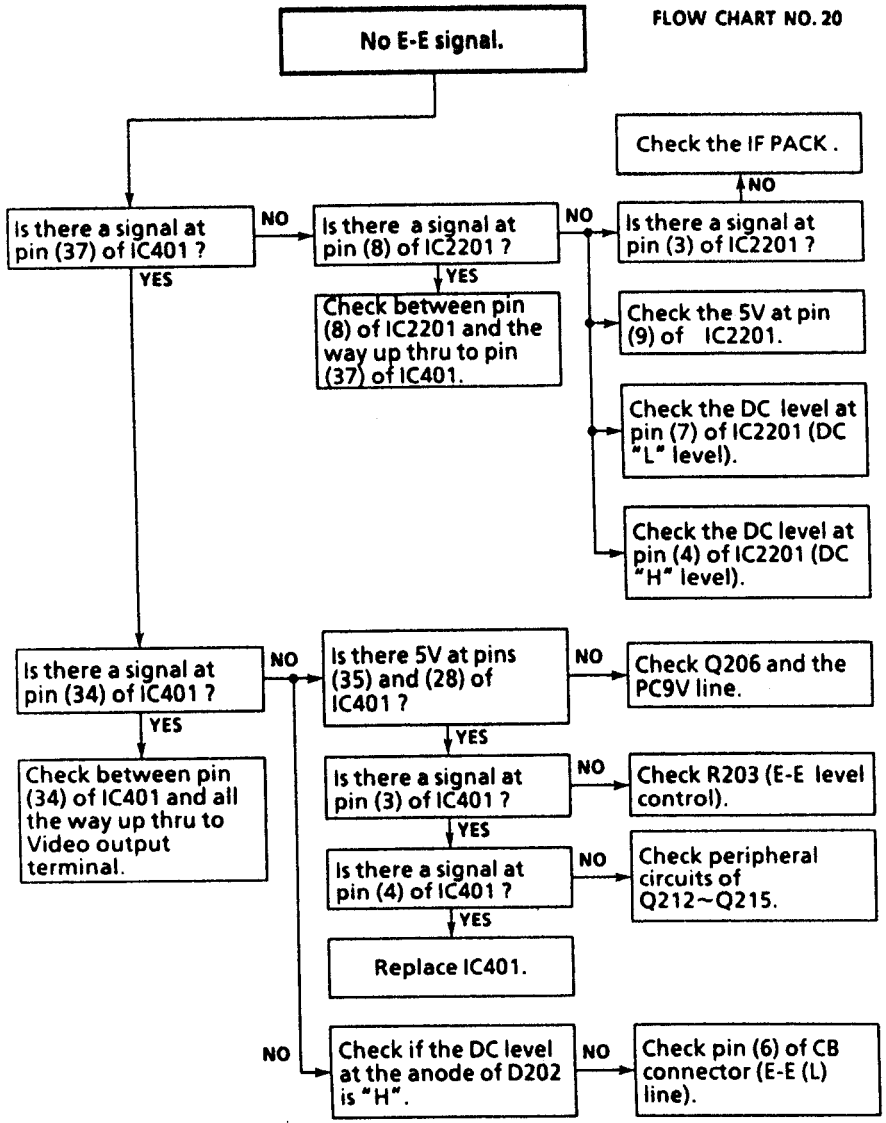
RECORDING MODE (CHROMINANCE) TROUBLESHOOTING

FLOW CHART NO. 19



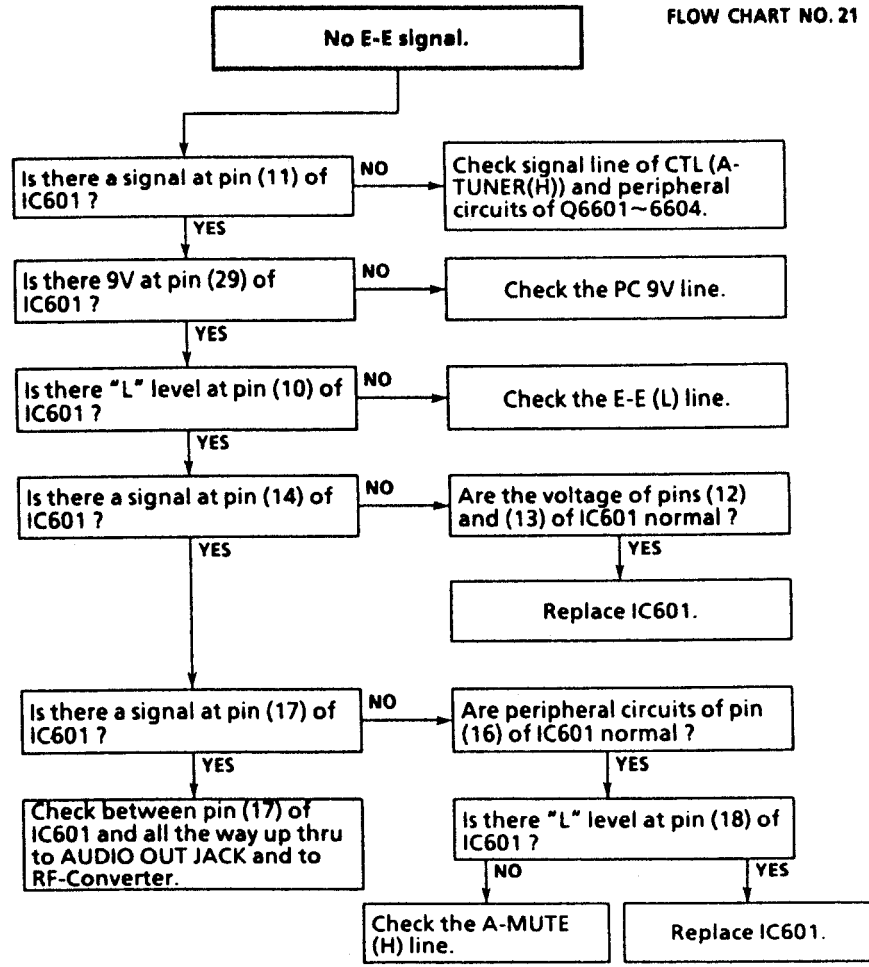
E-E MODE TROUBLESHOOTING

FLOW CHART NO. 20


No E-E signal.
Is there a signal at pin (37) of IC401 ?
NO
YES
Is there a signal at pin (8) of IC2201 ?
NO
YES
Check between pin (8) of IC2201 and the way up thru to pin (37) of IC401.
Check the IF PACK .
NO
Is there a signal at pin (3) of IC2201 ?
Check the 5V at pin (9) of IC2201.
Check the DC level at pin (7) of IC2201 (DC "L" level).
Check the DC level at pin (4) of IC2201 (DC "H" level).
Is there a signal at pin (34) of IC401 ?
NO
YES
Check between pin (34) of IC401 and all the way up thru to Video output terminal.
Is there 5V at pins (35) and (28) of IC401 ?
NO
YES
Check Q206 and the PC9V line.
Is there a signal at pin (3) of IC401 ?
NO
YES
Check R203 (E-E level control).
Is there a signal at pin (4) of IC401 ?
NO
YES
Check peripheral circuits of Q212~Q215.
Replace IC401.
NO
Check if the DC level at the anode of D202 is "H".
NO
Check pin (6) of CB connector (E-E (L) line).

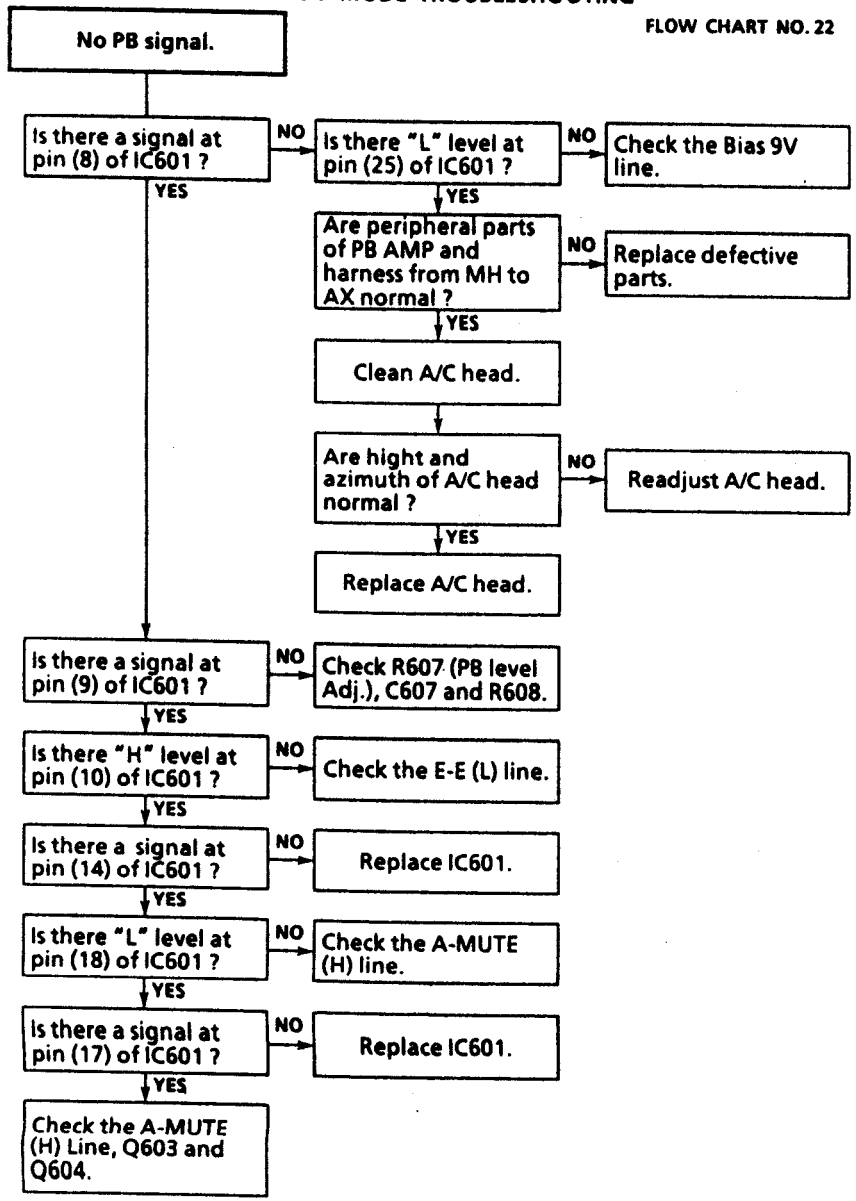
E-E MODE TROUBLESHOOTING (AUDIO)

FLOW CHART NO. 21


No E-E signal.
Is there a signal at pin (11) of IC601 ?
NO
YES
Check signal line of CTL (A-TUNER(H)) and peripheral circuits of Q6601~6604.
Is there 9V at pin (29) of IC601 ?
NO
YES
Check the PC 9V line.
Is there "L" level at pin (10) of IC601 ?
NO
YES
Check the E-E (L) line.
Is there a signal at pin (14) of IC601 ?
NO
YES
Are the voltage of pins (12) and (13) of IC601 normal ?
YES
Replace IC601.
Is there a signal at pin (17) of IC601 ?
NO
YES
Are peripheral circuits of pin (16) of IC601 normal ?
YES
Check between pin (17) of IC601 and all the way up thru to AUDIO OUT JACK and to RF-Converter.
Is there "L" level at pin (18) of IC601 ?
NO
YES
Check the A-MUTE (H) line.
Replace IC601.

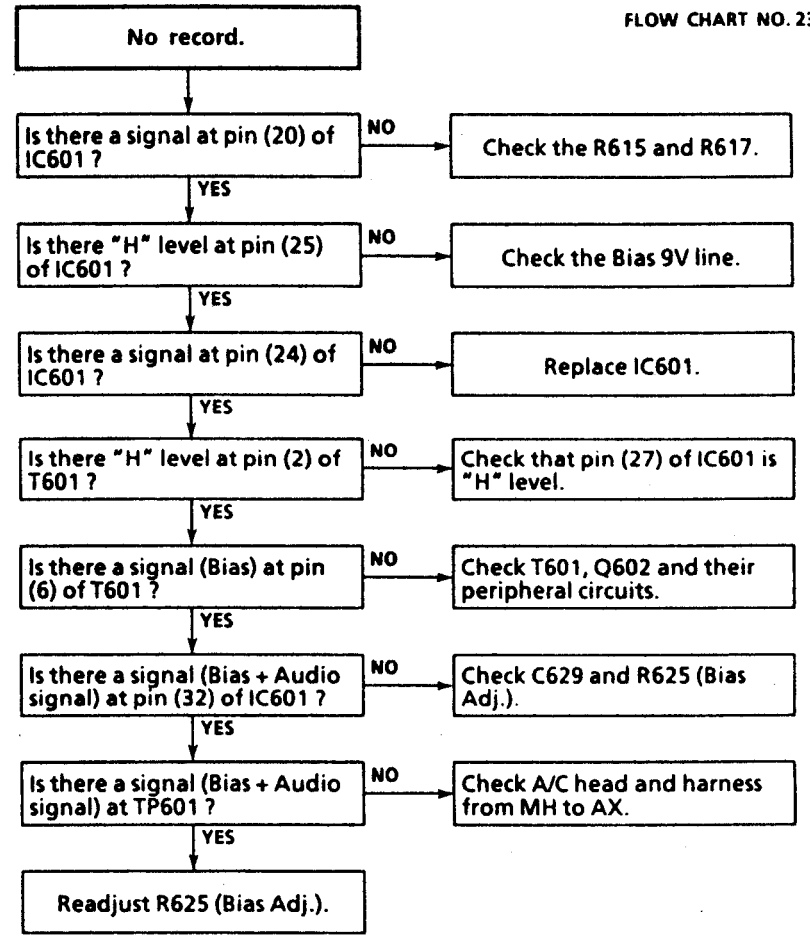
PLAYBACK MODE TROUBLESHOOTING

FLOW CHART NO. 22


No PB signal.
Is there a signal at pin (8) of IC601 ?
NO
Is there "L" level at pin (25) of IC601 ?
NO
Check the Bias 9V line.
YES
YES
Are peripheral parts of PB AMP and harness from MH to AX normal ?
NO
Replace defective parts.
YES
Clean A/C head.
Are hight and azimuth of A/C head normal ?
NO
Readjust A/C head.
YES
Replace A/C head.
Is there a signal at pin (9) of IC601 ?
NO
Check R607 (PB level Adj.), C607 and R608.
YES
Is there "H" level at pin (10) of IC601 ?
NO
Check the E-E (L) line.
YES
Is there a signal at pin (14) of IC601 ?
NO
Replace IC601.
YES
Is there "L" level at pin (18) of IC601 ?
NO
Check the A-MUTE (H) line.
YES
Is there a signal at pin (17) of IC601 ?
NO
Replace IC601.
YES
Check the A-MUTE (H) Line, Q603 and Q604.

RECORDING MODE TROUBLESHOOTING

FLOW CHART NO. 23


No record.
Is there a signal at pin (20) of IC601 ?
NO
Check the R615 and R617.
YES
Is there "H" level at pin (25) of IC601 ?
NO
Check the Bias 9V line.
YES
Is there a signal at pin (24) of IC601 ?
NO
Replace IC601.
YES
Is there "H" level at pin (2) of T601 ?
NO
Check that pin (27) of IC601 is "H" level.
YES
Is there a signal (Bias) at pin (6) of T601 ?
NO
Check T601, Q602 and their peripheral circuits.
YES
Is there a signal (Bias + Audio signal) at pin (32) of IC601 ?
NO
Check C629 and R625 (Bias Adj.).
YES
Is there a signal (Bias + Audio signal) at TP601 ?
NO
Check A/C head and harness from MH to AX.
YES
Readjust R625 (Bias Adj.).

REPLACEMENT OF TIMER IC5003 (E^2PROM)

Servicing precautions

When the IC5003 E^2PROM (VHIBR93C46A-1, VHIXRM9346A-1 or VHICAT93C46-1) in the timer unit has been replaced, make the following reprogramming.

Depending on models, the IC5003 E^2PROM has been factory-adjusted for its memory function. It is therefore necessary to reprogram the memory function for the model in question. Note that the servo circuit requires readjustments for the slow and still modes.

Memory function reprogramming

1. Push the OPERATE button to turn the power on.
2. Press the TEST button on the timer PWB to get the unit in the TEST mode.
3. Push the CH SET button to get the unit in the CH SET mode.
4. Using the CHANNEL (+) AND (−) buttons, select the right function numbers from among 148-163, which appear in the fluorescent display tube, referring to the E^2PROM map. Push the DISPLAY button to pick up the functions (ON) and the CLEAR button to discard the functions (OFF).
   * When the DISPLAY button has been pushed (ON), the memory function No. starts flashing.
   * When the CLEAR button has been pushed (OFF), the memory function No. lights up.
5. Press the CH SET button to clear the CH SET mode.
6. Make the cathode of the timer D5004 and TJ203 on timer PWB short circuited, and the settings will be displayed in hexadecimal notation. Now you can see if the settings are correct.
   Example:
   "ON" and "OFF" are taken as "1" and "0" respectively. The numbers 148 to 163 are divided into four groups and each group's setting is displayed in hexadecimal notation.

163	162	161	160	159	158	157	156	155	154	153	152	151	150	149	148
0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		⇩				⇩				⇩				⇩	
		4				2				0				0	

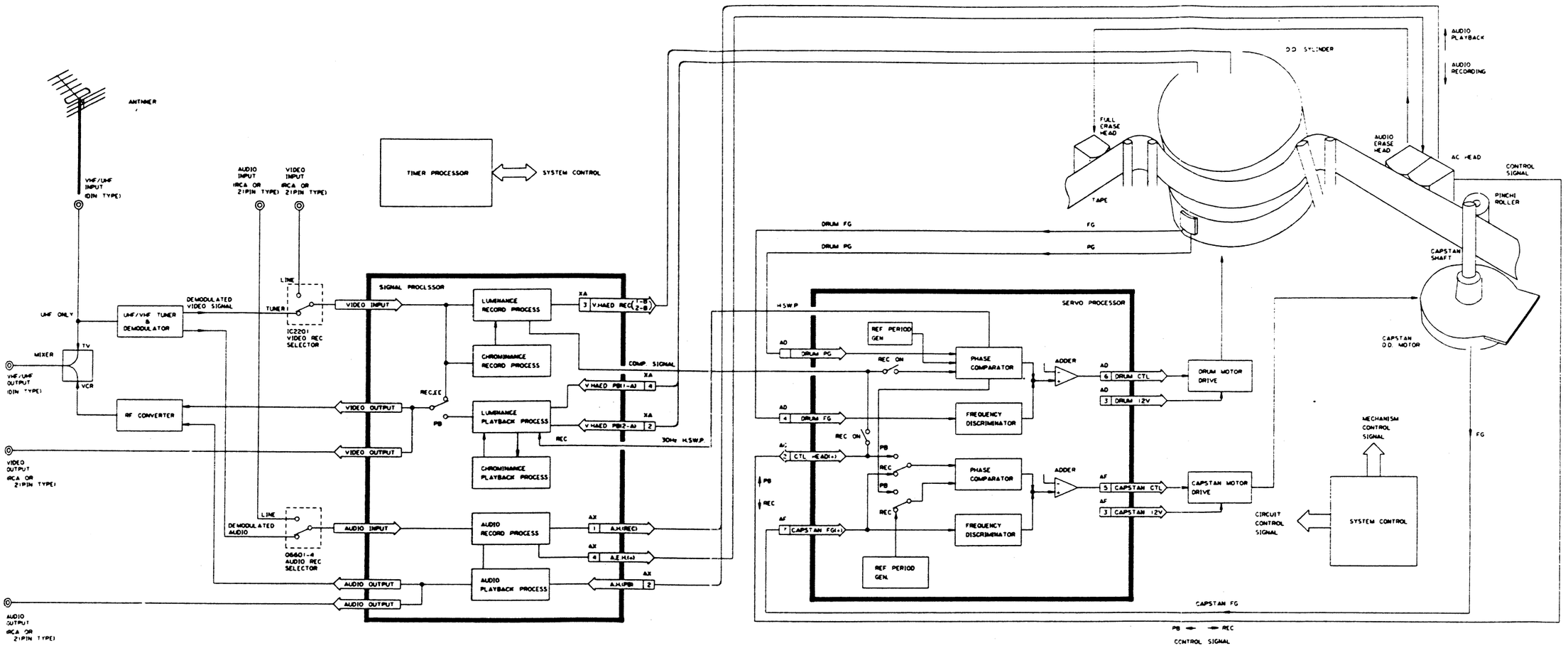
   "4200" appears in the fluorescent display tube.
7. Finally push the ALC button to clear the TEST mode.

E^2PROM map

Fun No	Function name														
163	I²C														
162	SIMUL	○	○	○	○	○	○	○	○	○	○	○	○	○	○
161	MULTI														
160	OEM					○							○	○	
159	COLOUR2					○							○		
158	COLOUR1					○							○		
157	COLOUR0	○	○	○	○		○	○	○	○	○	○		○	○
156	GERMANY														
155	AUX2														
154	HYPER			○							○	○			
153	UHF						○		○					○	
152	FRENCH														
151	LP							○	○	○	○	○	○	○	○
150	VPS		○	○						○	○				
149	Hi-Fi														
148	VCR				○										○
Displayed on screen		4200	4204	4244	4201	5C00	4220	4208	4228	420C	424C	4248	5C08	5228	4209
MODEL'S (VC-)		A43S A43SM A33X A38X A43X A33BP A43YM A33LM	A43GM A265 GM	A43SV	A33NZ A38NZ	B34N B35D B36B	A33HM A43HM	A48X A63X A53SM A63YM A63BP A53YM	A48HM A63HM	A53GM	A63SV A63GM	A63S A63SM	B67NT B78DT B68BTN	B66WT	A63NZ

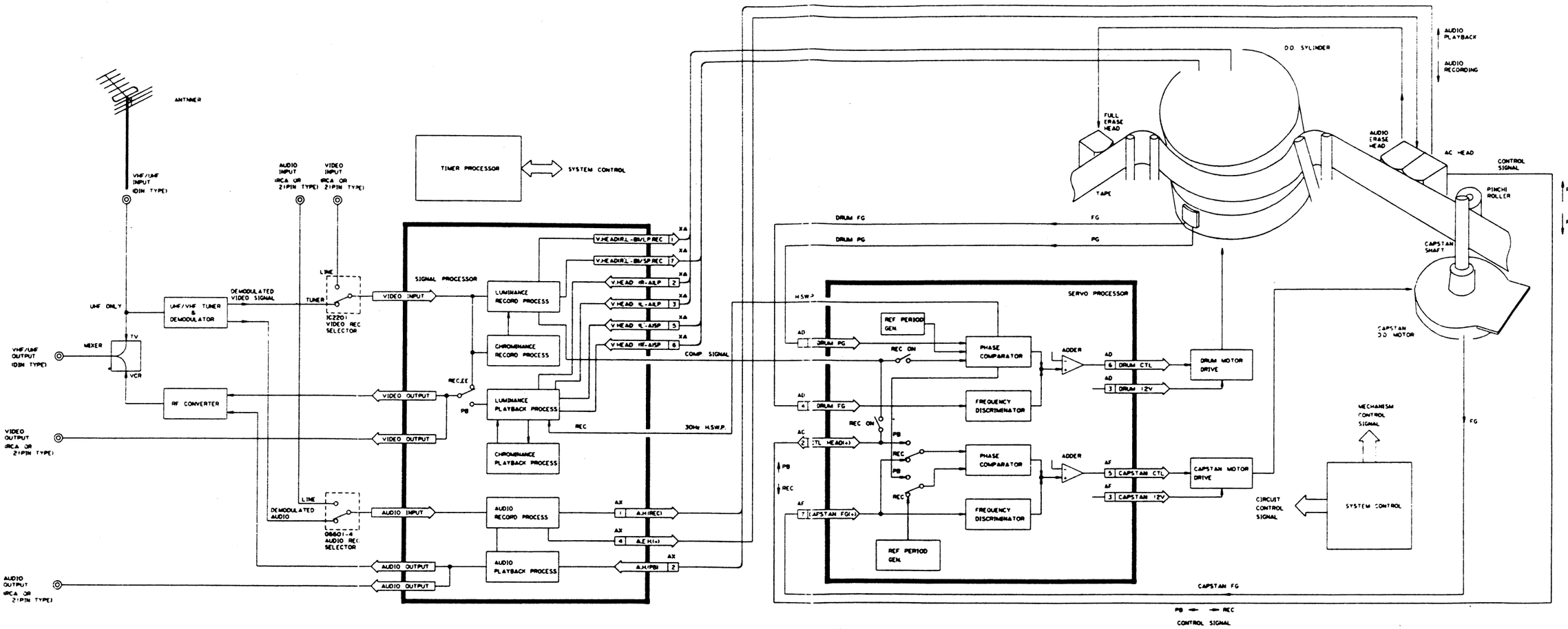
Note: "○" : ON " " : OFF

OVERALL BLOCK DIAGRAM (VC-A33BP)

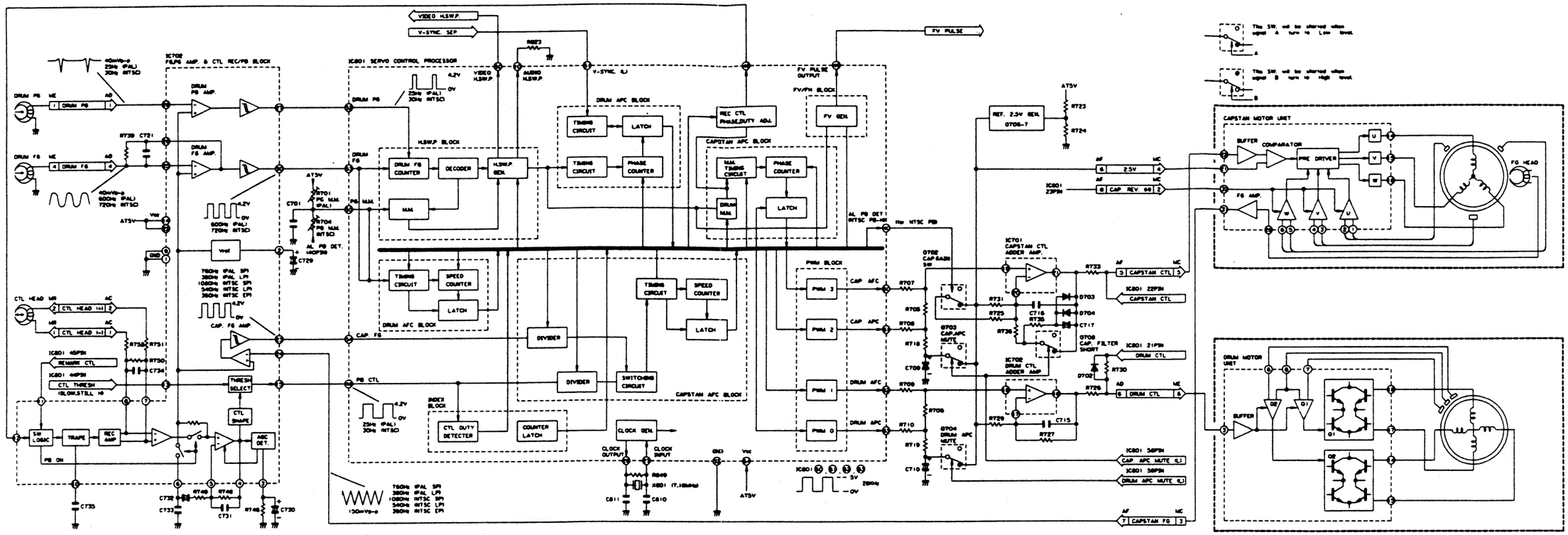


VC-A33BP
VC-A63BP

OVERALL BLOCK DIAGRAM (VC-A63BP)

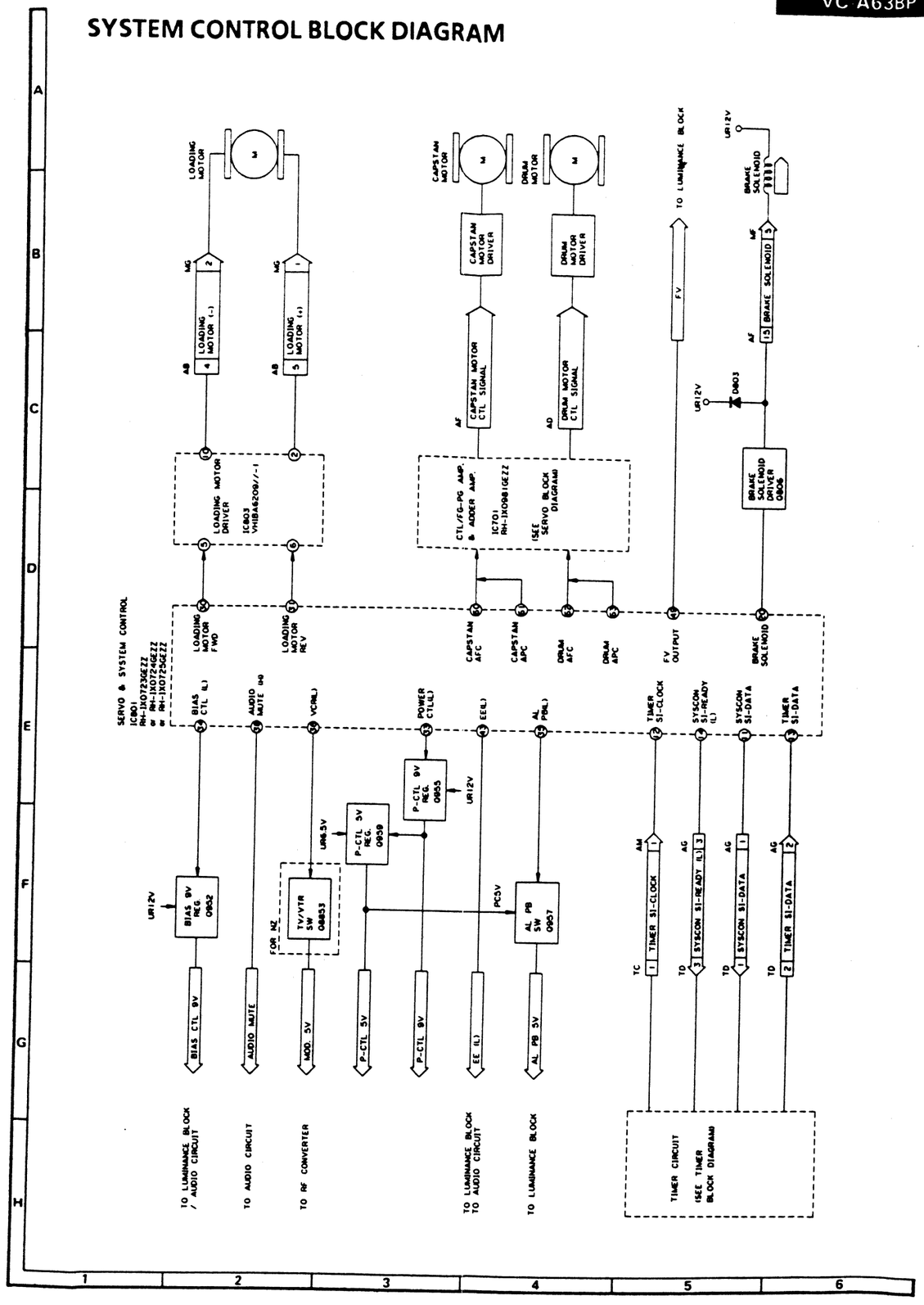


SERVO PROCESS BLOCK DIAGRAM

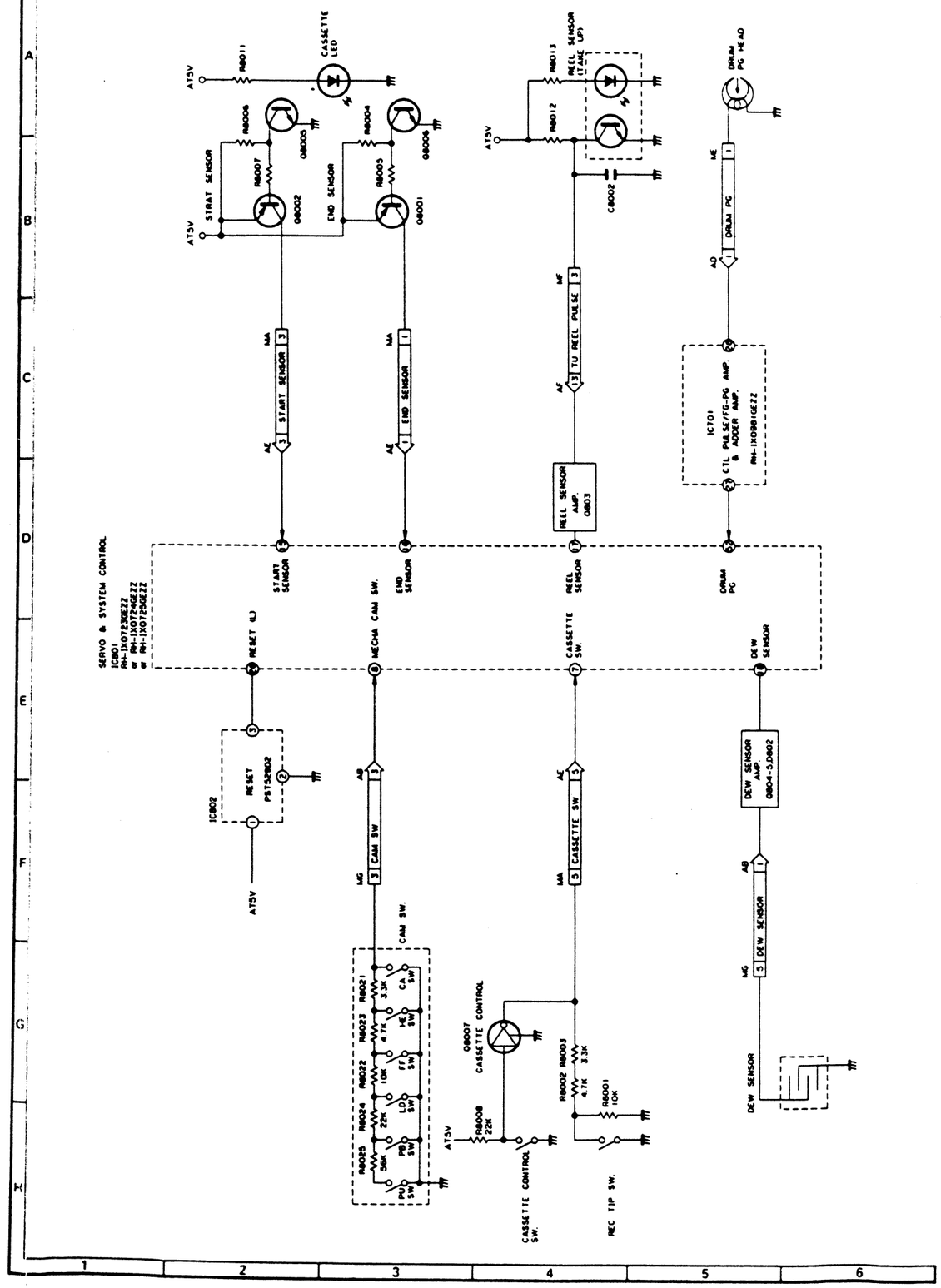


VC A33BP
VC A63BP

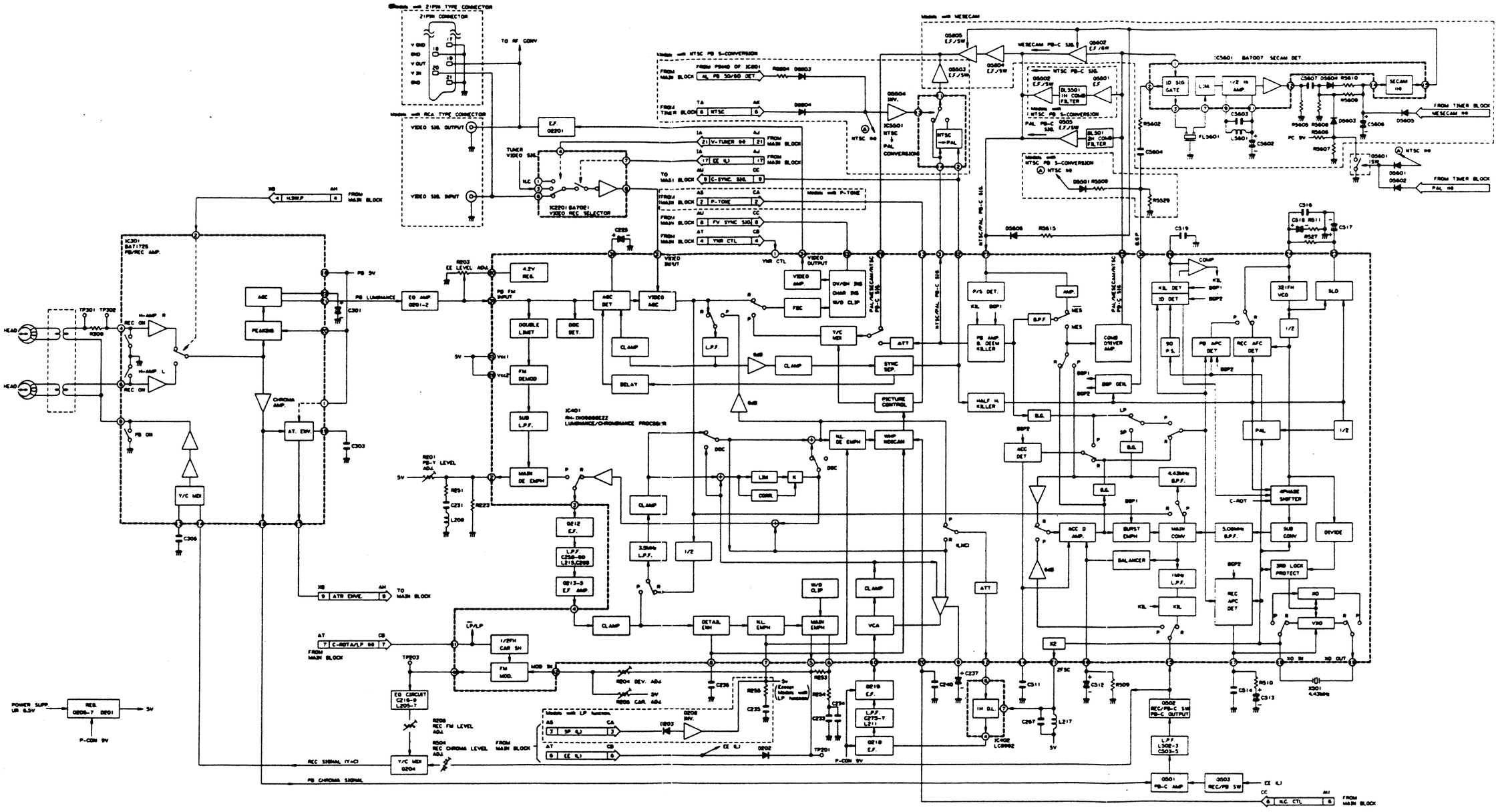
SYSTEM CONTROL BLOCK DIAGRAM



SAFETY DEVICE BLOCK DIAGRAM

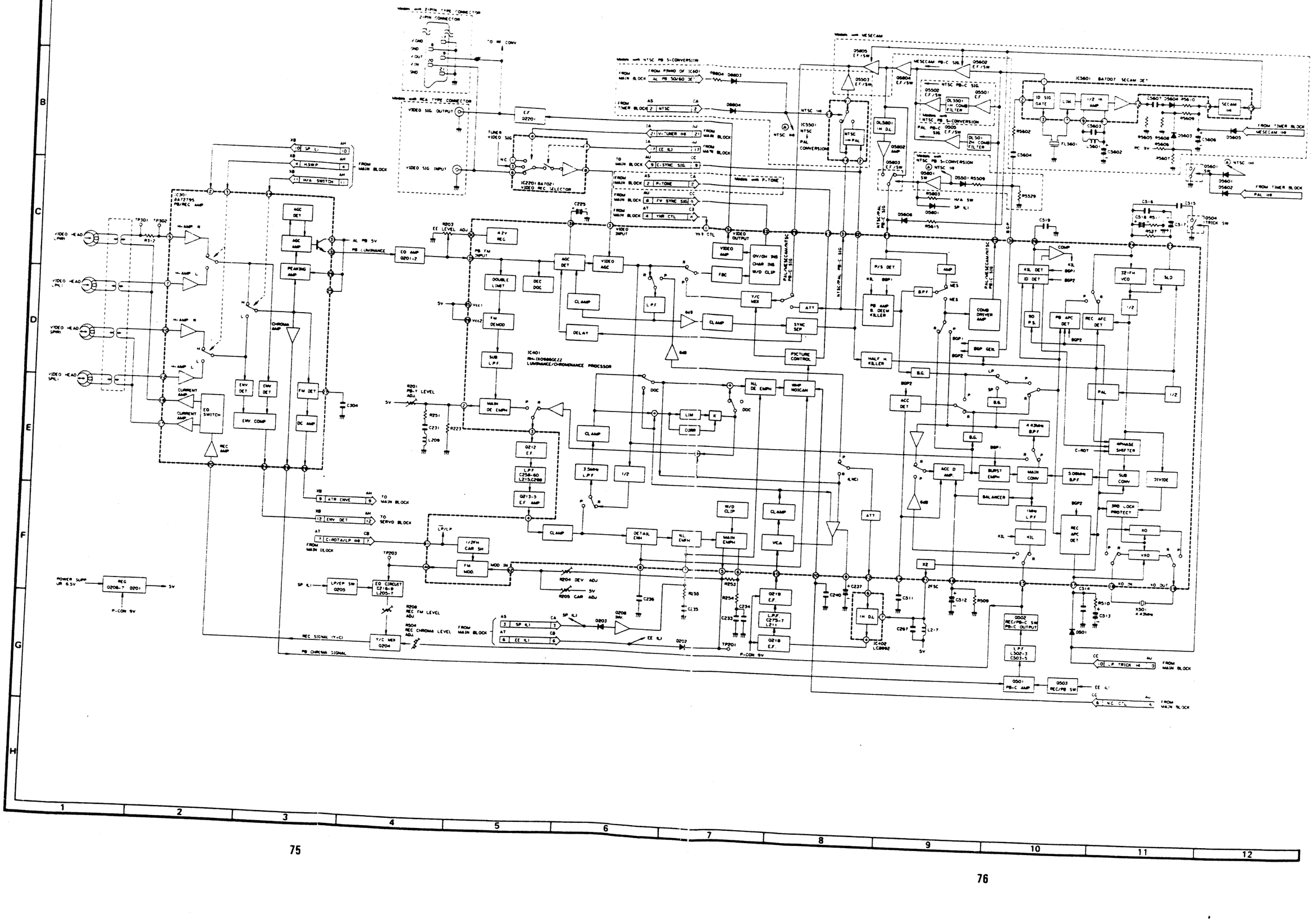


SIGNAL FLOW BLOCK DIAGRAM (VC-A33BP)

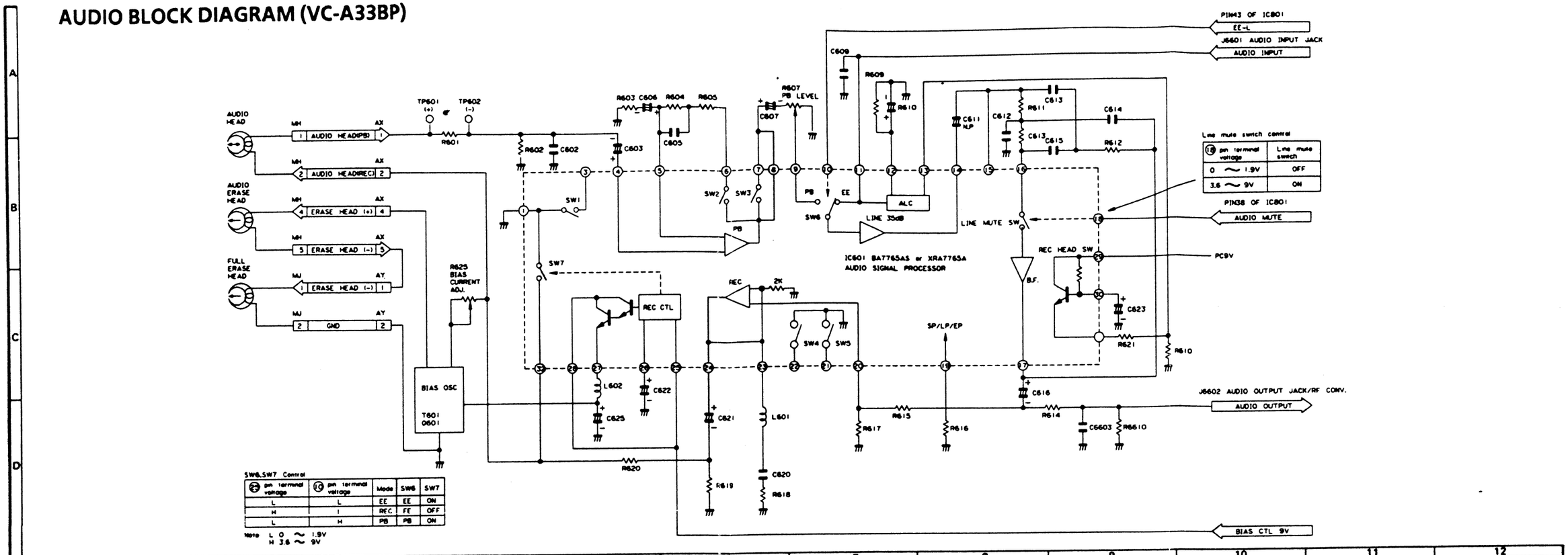


VC-A33BP
VC-A63BP

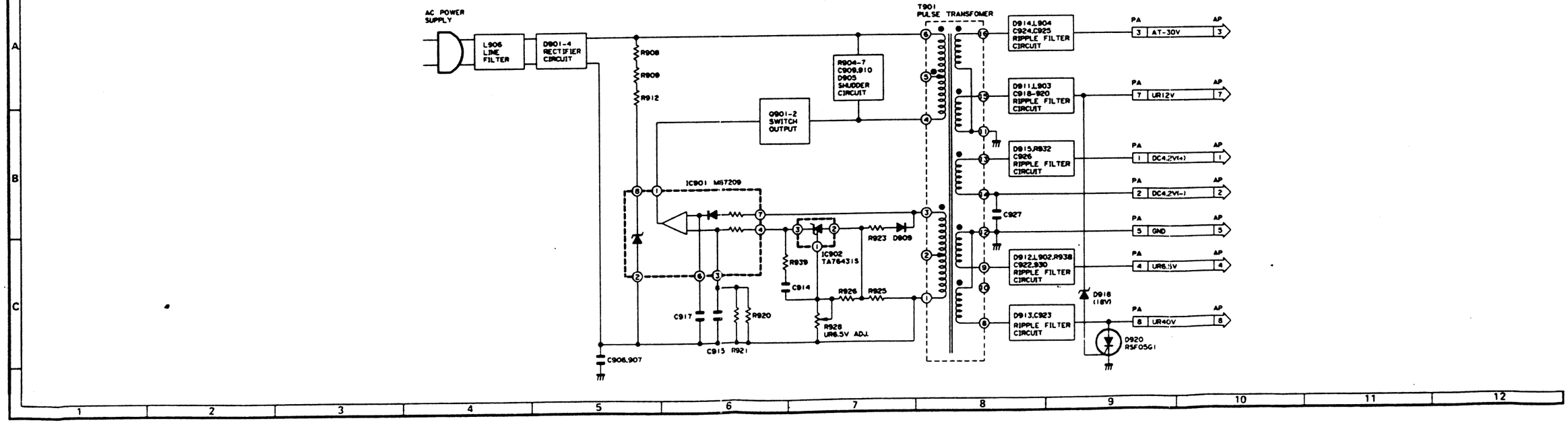
SIGNAL FLOW BLOCK DIAGRAM (VC-A63BP)


A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
10
11
12
IC5601 BA7007 SECAM DET
IC401
LUMINANCE/CHROMINANCE PROCESSOR
IC5501
NTSC
PAL
CONVERSION
IC402
LC8992
VIDEO HEAD (L PWR)
VIDEO HEAD (L PB)
VIDEO HEAD (H PWR)
VIDEO HEAD (H PB)
CURRENT AMP
EQ SWITCH
REC AMP
ENV DET
ENV. COMP
FM DET
DC AMP
AGC DET
AGC AMP
PEAKING AMP
CHROMA AMP
EQ AMP
Q201-2
4.2V REG
DOUBLE LIMIT
DEC DOC
FM DEMOD
SUB L.P.F.
MAIN DE EMPH
CLAMP
DELAY
VIDEO AGC
VIDEO AMP
FBC
Y/C MIX
SYNC SEP
PICTURE CONTROL
OV/CH INS
CHAR INS
W/D CLIP
ATT
DOC
LIM
COMB
NL DE EMPH
WHP NOISCAN
3.5MHz L.P.F.
1/2
DETAIL EMH
NL EMPH
MAIN EMPH
M/D CLIP
VCA
CLAMP
1/2FH CAR SH
FM MOD.
MOD IN
LP/EP SW
Q205
EQ CIRCUIT
C216-9
L205-7
REC FM LEVEL ADJ
REC CHROMA LEVEL ADJ
FM DEV ADJ
3V
FM CAR ADJ
Y/C MIX
Q204
REC SIGNAL (Y+C)
PB CHROMA SIGNAL
FROM MAIN BLOCK
TO MAIN BLOCK
TO SERVO BLOCK
ATR ENVE
ENV DET
C-ROT&LP SW
LP/EP
POWER SUPP
OR 6.5V
REG
Q206-7 Q201
P-CON 9V
5V
TUNER VIDEO SIG
VIDEO SIG OUTPUT
VIDEO SIG INPUT
TO IR CONV
2 PIN CONNECTOR
Q220-1
ICZ201 BA702
VIDEO REC SELECTOR
SP SW
H/A SWITCH
H/A SW
SP (L)
P-TONE
FV SYNC SIG
Y/NR CTL
C-SYNC SIG
V-TUNER H6
EE (L)
NTSC PB S-CONVERSION
NTSC PB-C SIG
PAL PB-C SIG
NTSC/PAL PB-C SIG
PAL/SECAM/NTSC PB-C SIG
NTSC/PAL SIG
PAL/SECAM/NTSC
NTSC H6
PAL H6
SECAM H6
FROM TIMER BLOCK
TRICK SW
P/S DET
AMP
BPF
COMB DRIVER AMP
HALF H KILLER
PB APC DET
REC APC DET
KIL DET
ID DET
ID SIG GATE
LIM
1/2 H AMP
FL5601
L5601
L5602
32FH VCO
1/2
SLD
PAL
4.43MHz BPF
4PHASE SHIFTER
C-ROT
SUB CONV
DIVIDE
SMD LOCK PROTECT
X0
V-X0
X501
4.43MHz
ACC DET
BURST EMPH
MAIN CONV
BAL AMCER
1MHz L.P.F
ACC D AMP.
BGP GEN
BGP1
BGP2
SP
BG
PB APC DET
REC AFC DET
SID P.S.
COMP
CHARA
0502
REC/PB-C SW
PB-C OUTPUT
0501
PB-C AMP
0503
REC/PB SW
L.P TRICK H6
L.P
L502-3
C503-5
D501
R5510
C5513
C5514
C5512
R509
C511
C207
L217
C240
C237
C233
C234
R253
R254
R255
C235
C236
R204
R205
R206
R504
R203
R201
R251
C231
R223
L209
C225
C304
R312
TP301
TP302
TP203
TP201
Q203
Q208
Q202
Q212
Q213-5
Q218
Q219
C275-7
L211
C256-60
L215/C288
R5602
R5603
R5604
R5605
R5606
R5607
R5608
R5609
C5602
C5603
C5604
C5605
C5606
C5607
C5608
C5609
C5610
C5611
C5612
C5613
C5614
C5615
C5616
C5617
C5618
C5619
R5527
R5529
R5509
R5803
R5804
R5805
R5806
R5807
R5808
R5809
R5810
R5811
R5812
R5813
R5814
R5815
C5801
C5802
C5803
C5804
C5805
C5806
C5807
C5808
C5809
C5810
C5811
C5812
C5813
C5814
C5815
C5816
C5817
C5818
C5819
DL5801
1H DL
DL5501
1H COMB FILTER
DL5601
PH COMB FILTER
Q5501
Q5502
Q5503
Q5504
Q5601
Q5602
Q5603
Q5604
Q5605
Q5606
Q5607
Q5608
Q5609
Q5610
Q5611
Q5612
Q5613
Q5614
Q5615
Q5616
Q5617
Q5618
Q5619
Q5620
Q5621
Q5622
Q5623
Q5624
Q5625
Q5626
Q5627
Q5628
Q5629
Q5630
Q5631
Q5632
Q5633
Q5634
Q5635
Q5636
Q5637
Q5638
Q5639
Q5640

AUDIO BLOCK DIAGRAM (VC-A33BP)

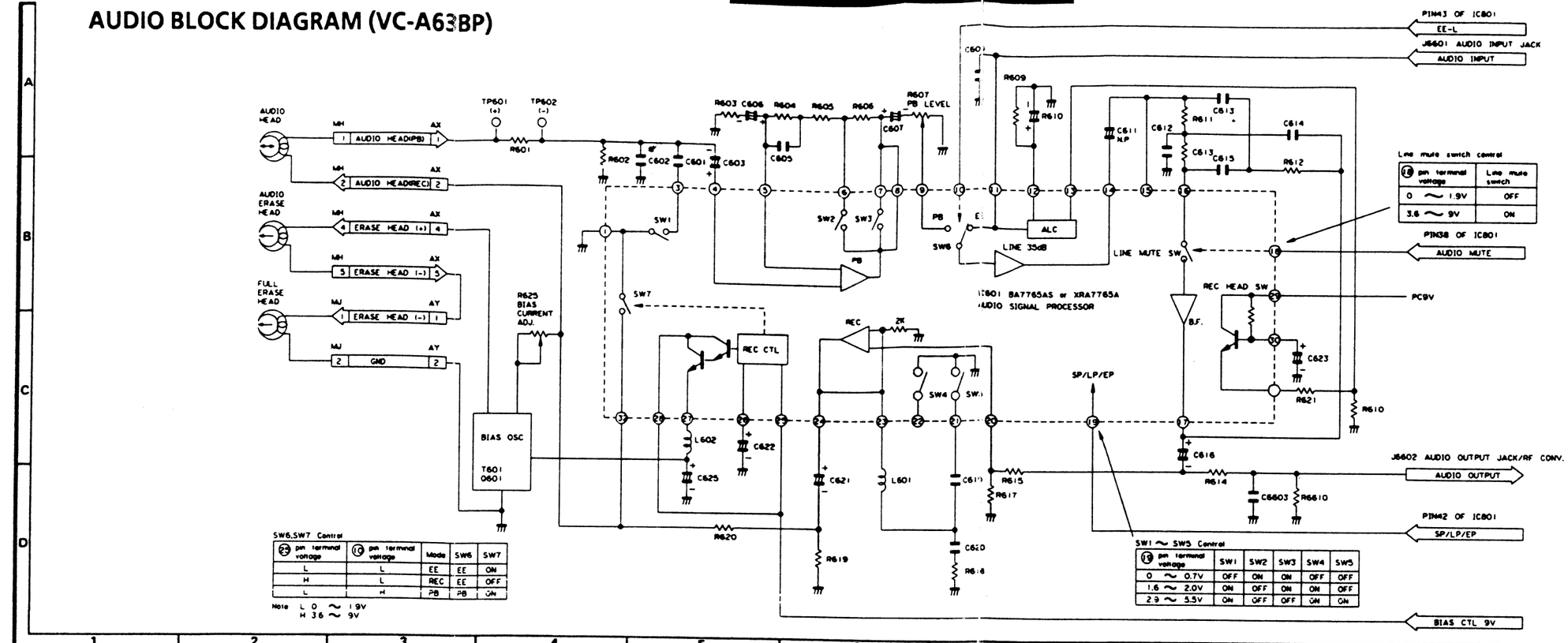


POWER CIRCUIT BLOCK DIAGRAM

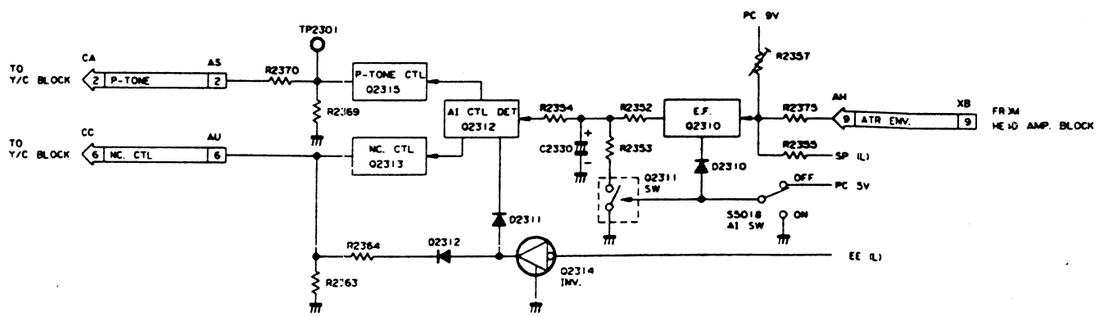


VC A33BP
VC A63BP

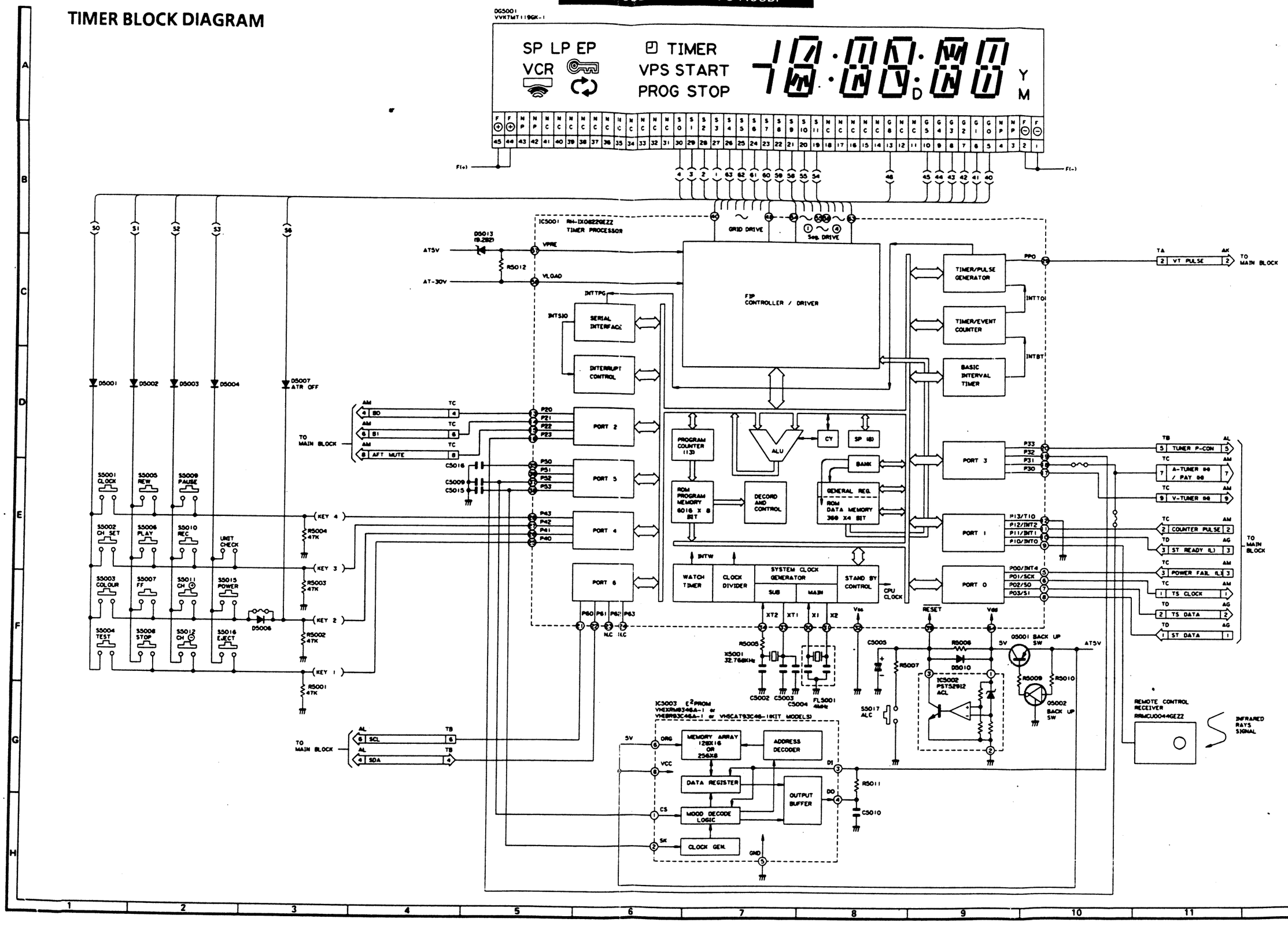
AUDIO BLOCK DIAGRAM (VC-A63BP)



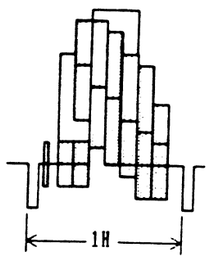
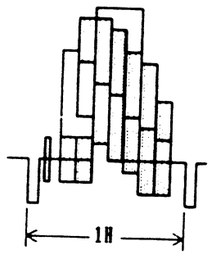
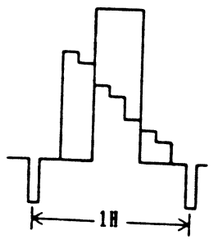
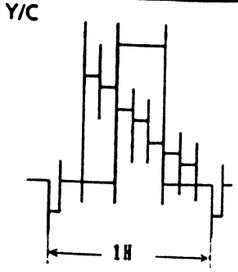
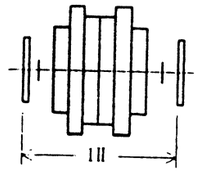
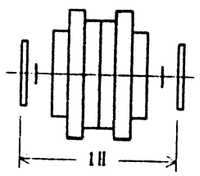
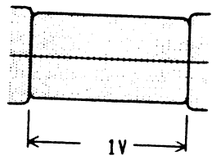
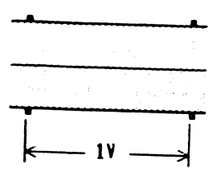
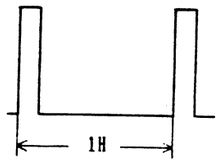
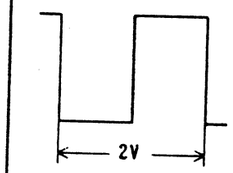
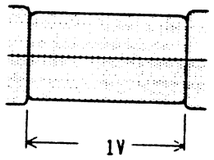
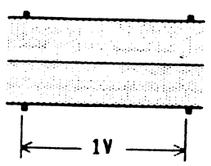
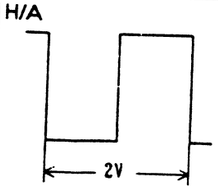
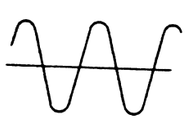
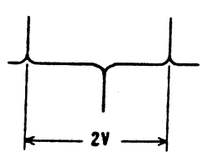
AUTIO PICTURE CONTROL BLOCK DIAGRAM (VC-A63BP)

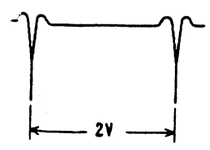
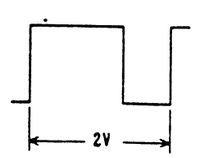
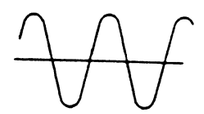
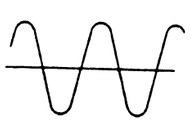
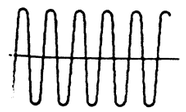
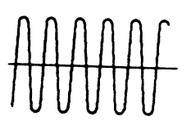
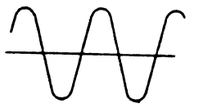
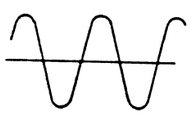


TIMER BLOCK DIAGRAM



WAVEFORMS

Y/C  V:1.0Vp-p IC401 PIN37 REC/EE	Y/C  V:2.0Vp-p IC401 PIN34 REC/PB	Y/C  V:540mVp-p REC/EE V:550mVp-p PB IC401 PIN4	Y/C  V:500mVp-p TP201 REC/EE
Y/C  V:370mVp-p REC/EE V:250mVp-p PB IC401 PIN15	Y/C  V:500mVp-p IC401 PIN29 PB	Y/C  V:450mVp-p IC401 PIN39 PB	Y/C  V:1.0Vp-p TP203 REC
Y/C  V:4.3Vp-p IC401 PIN32 COMPOSITE SYNC.	Y/C  V:1.1Vp-p IC401 PIN41 CHROMA ROTATION	H/A  **2 Head:** V:240mVp-p **4 Head:** V:220mVp-p (SP) V:180mVp-p (LP) XB CONNECTOR PIN6 PB AH CONNECTOR PIN6	H/A  **2 Head:** V:130mVp-p **4 Head:** V:120mVp-p (SP) V:90mVp-p (LP) XB CONNECTOR PIN2 REC AH CONNECTOR PIN2
H/A  **2 Head:** V:4.3Vp-p **4 Head:** V:4.8Vp-p HEAD SWITCHING PULSE AH CONNECTOR PIN4 XB CONNECTOR PIN4	SERVO H:760Hz (PAL SP) V:150mVp-p AF CONNECTOR PIN6 PB/REC	SERVO  H:600Hz (PAL) V:40mVp-p AD CONNECTOR PIN4 PB/REC	SERVO  V:1.1Vp-p (SP MODE) IC701 PIN4 PB

SERVO  H:25Hz (PAL) V:40mVp-p AD CONNECTOR PIN1 PB	SERVO  H:25Hz (PAL) V:4.2Vp-p IC701 PIN15 PB	AUDIO  H:1kHz V:38mVp-p IC601 PIN11 REC/ EE	AUDIO  H:1kHz V:1.8Vp-p IC601 PIN24 REC
AUDIO  H:70kHz ± 5kHz V:8mVp-p TP601 (+), TP602 (–) REC	AUDIO  H:70kHz ± 5kHZ V:66Vp-p T601 PIN5 REC	AUDIO  H:1kHz V:32mVp-p IC601 PIN9 PB	AUDIO  H:1kHz V:0.96Vp-p REC V:0.8Vp-p PB AJ CONNECTOR PIN10

● **AUDIO** REC: – 8dBs 1KHz INPUT SIGNAL PB: Alignment tape (VROCPSV, 1KHz Level control signal)

SIGNAL FLOW SYMBOLS AT A GLANCE

MAIN CIRCUIT (1)

- D-ERR: Drum Error Voltage
- C-ERR: Capstan Error Voltage
- D-FG: Drum Frequency Comparison Signal
- C-FG: Capstan Frequency Comparison Signal
- D-PG: Drum Phase Comparison Signal
- PBCTL: Playback Control Comparison Signal

MAIN CIRCUIT (2)

- PB-C: Playback Chrominance Signal
- REC-C: Recording Chrominance Signal
- PB-Y: Playback Luminance Signal
- REC-Y: Recording Luminance Signal
- PB: Audio Playback Signal
- REC: Audio Recording Signal
- E-E: E-E Signal (Video) (Audio)

MAIN CIRCUIT (3)

- PB: Audio Playback Signal
- REC: Audio Recording Signal
- E-E: Audio E-E Signal

IF/TUNER CIRCUIT

- PB-C: Playback Chrominance Signal
- REC-C: Recording Chrominance Signal
- PB-Y: Playback Luminance Signal
- REC-Y: Recording Luminance Signal
- PB: Audio Playback Signal
- REC: Audio Recording Signal
- E-E: E-E Signal (Video) (Audio)

Y/C CIRCUIT

- PB-C: Playback Chrominance Signal
- REC-C: Recording Chrominance Signal
- PB-Y: Playback Luminance Signal
- REC-Y: Recording Luminance Signal
- E-E: E-E Signal (Video)

HEAD AMP CIRCUIT

- PB-C: Playback Chrominance Signal
- REC-C: Recording Chrominance Signal
- PB-Y: Playback Luminance Signal
- REC-Y: Recording Luminance Signal

SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE:
BE SURE TO USE GENUINE PARTS FOR SECURING THE SAFETY AND RELIABILITY OF THE SET. PARTS MARKED WITH "⚠" AND PARTS SHADED (IN BLACK) ARE ESPECIALLY IMPORTANT FOR MAINTAINING THE SAFETY AND PROTECTING ABILITY OF THE SET.
BE SURE TO REPLACE THEM WITH PARTS OF SPECIFIED PART NUMBER.

SAFETY NOTES:
1. *DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.*
2. *SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CASSIS IS OPERATING.*

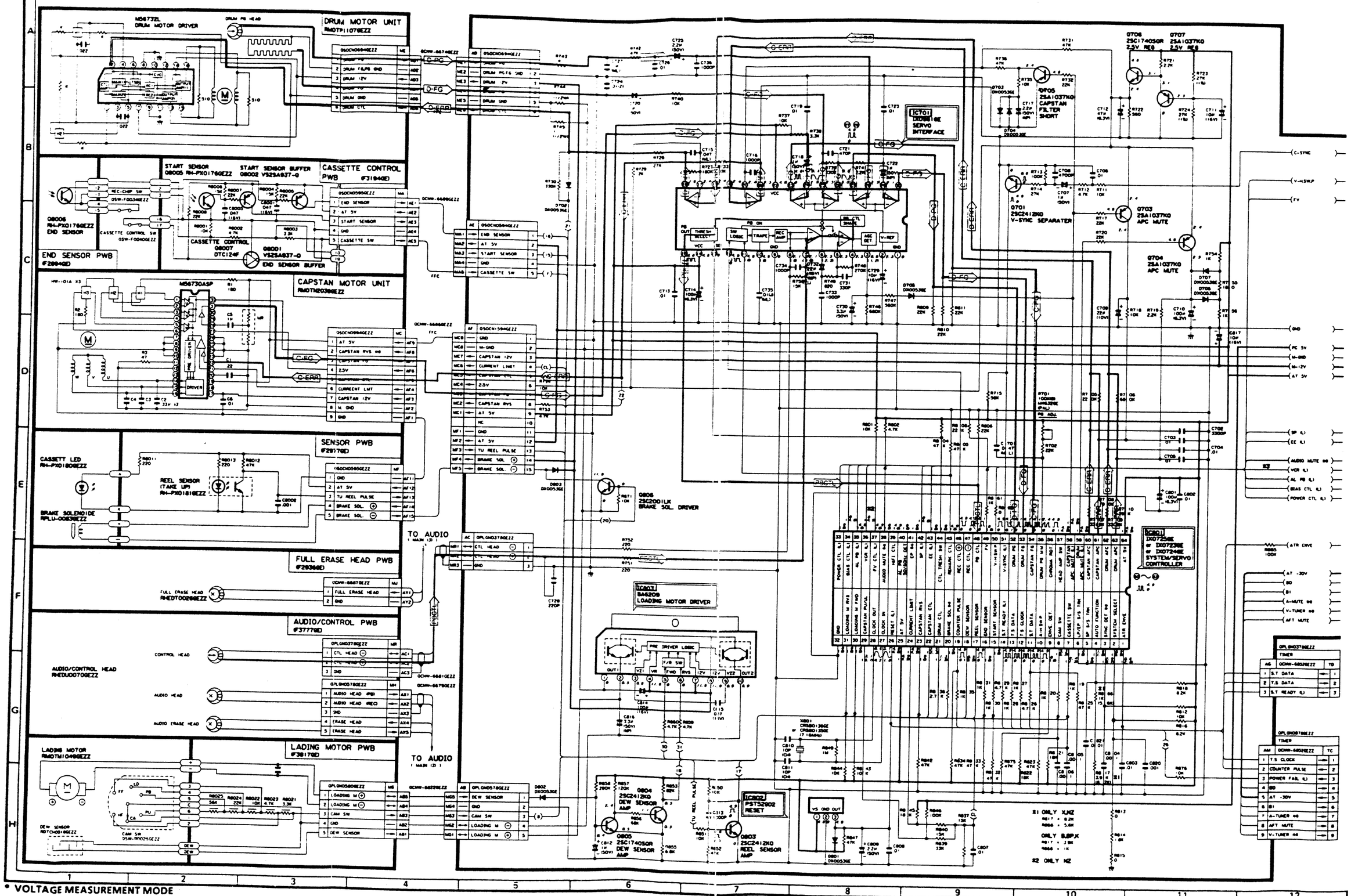
NOTES:
1. *The unit of resistance "ohm" is omitted (k = 1000 ohm, M = 1 Meg ohm).*
2. *All resistors are 1/8 watt, unless otherwise noted.*
3. *The unit of capacitance "F" is omitted (μ = μF, p = $\mu\mu$F).*
4. *The values in parentheses are the ones in the PB mode; the values without parentheses are the ones in the REC mode.*

VOLTAGE MEASUREMENT CONDITIONS:
1. *DC voltages are measured between points indicated and chassis ground by VTVM, with AC220V/50Hz supplied to unit and all controls are set to normal viewing picture unless otherwise noted.*
2. *Voltages are measured with 10000μV B & W or colour signal.*

WAVEFORM MEASUREMENT CONDITIONS:
10000μV 87.5 percent modulated colour bar signal is fed into tuner.

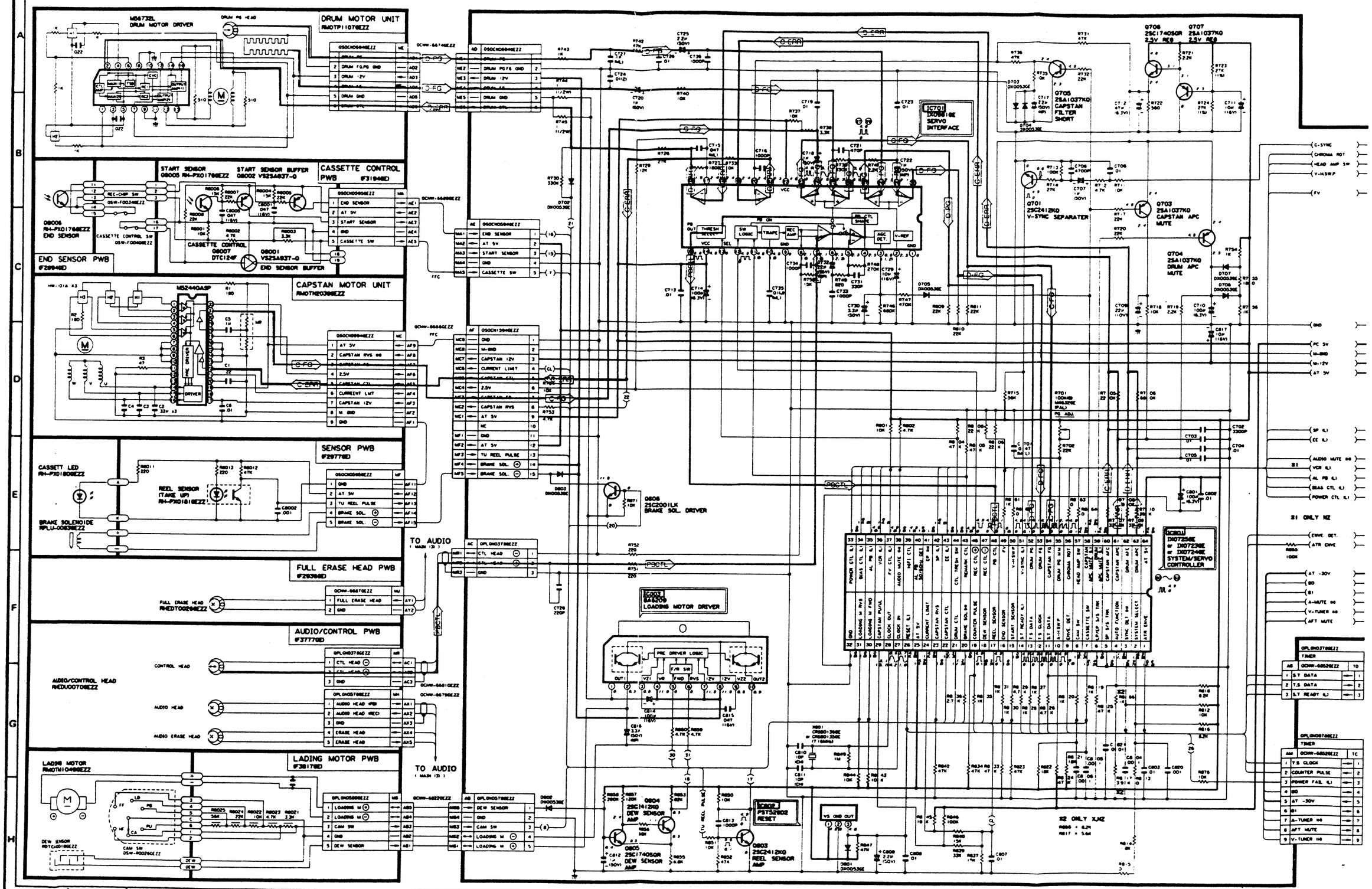
CAUTION:
This circuit diagram is original one. Therefore there may be a slight difference from yours.

MAIN CIRCUIT 1 (VC-A33BP)

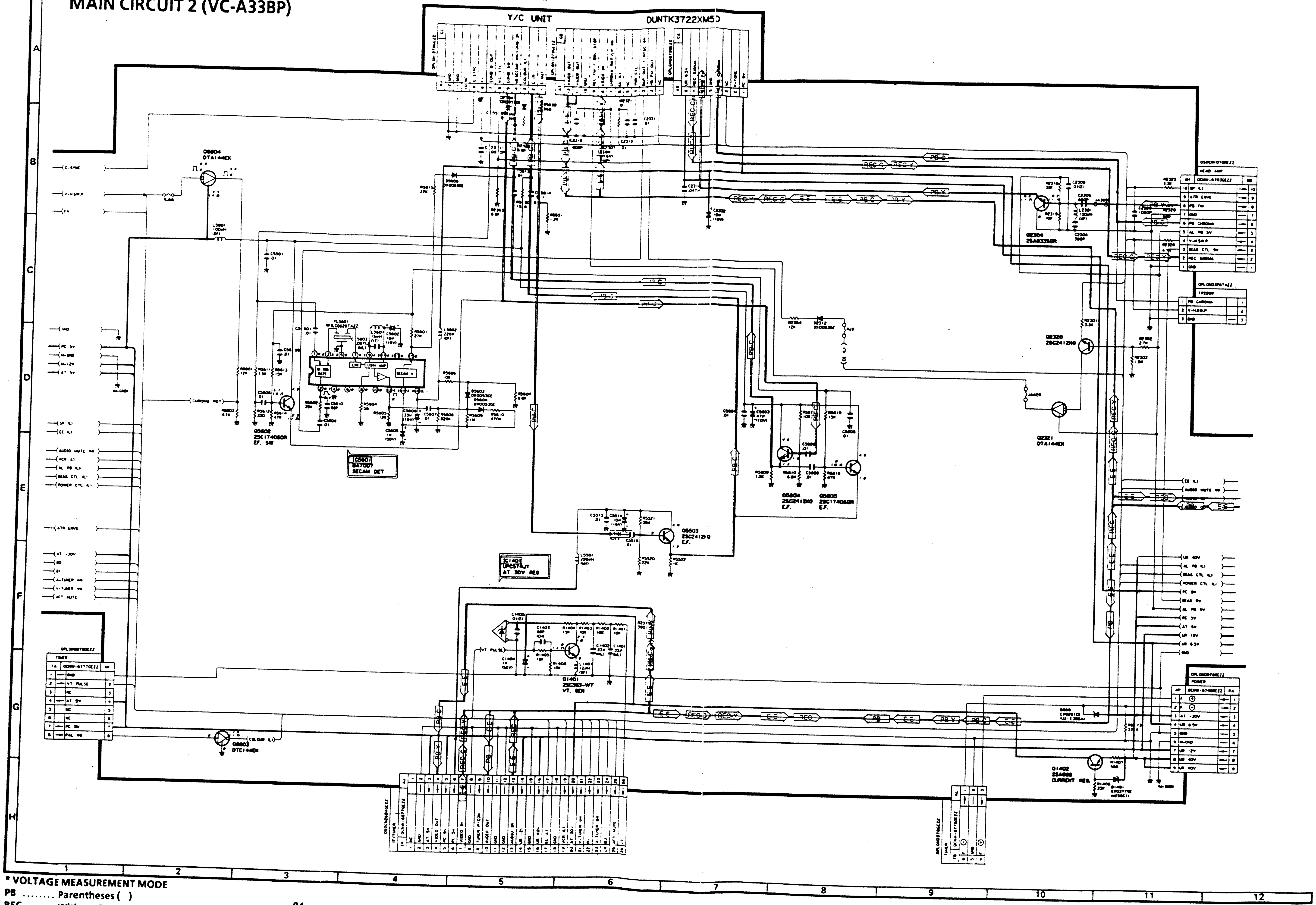


* VOLTAGE MEASUREMENT MODE
PB ..... Parentheses ( )
REC ..... Without Parentheses

MAIN CIRCUIT 1 (VC-A63BP)



MAIN CIRCUIT 2 (VC-A33BP)

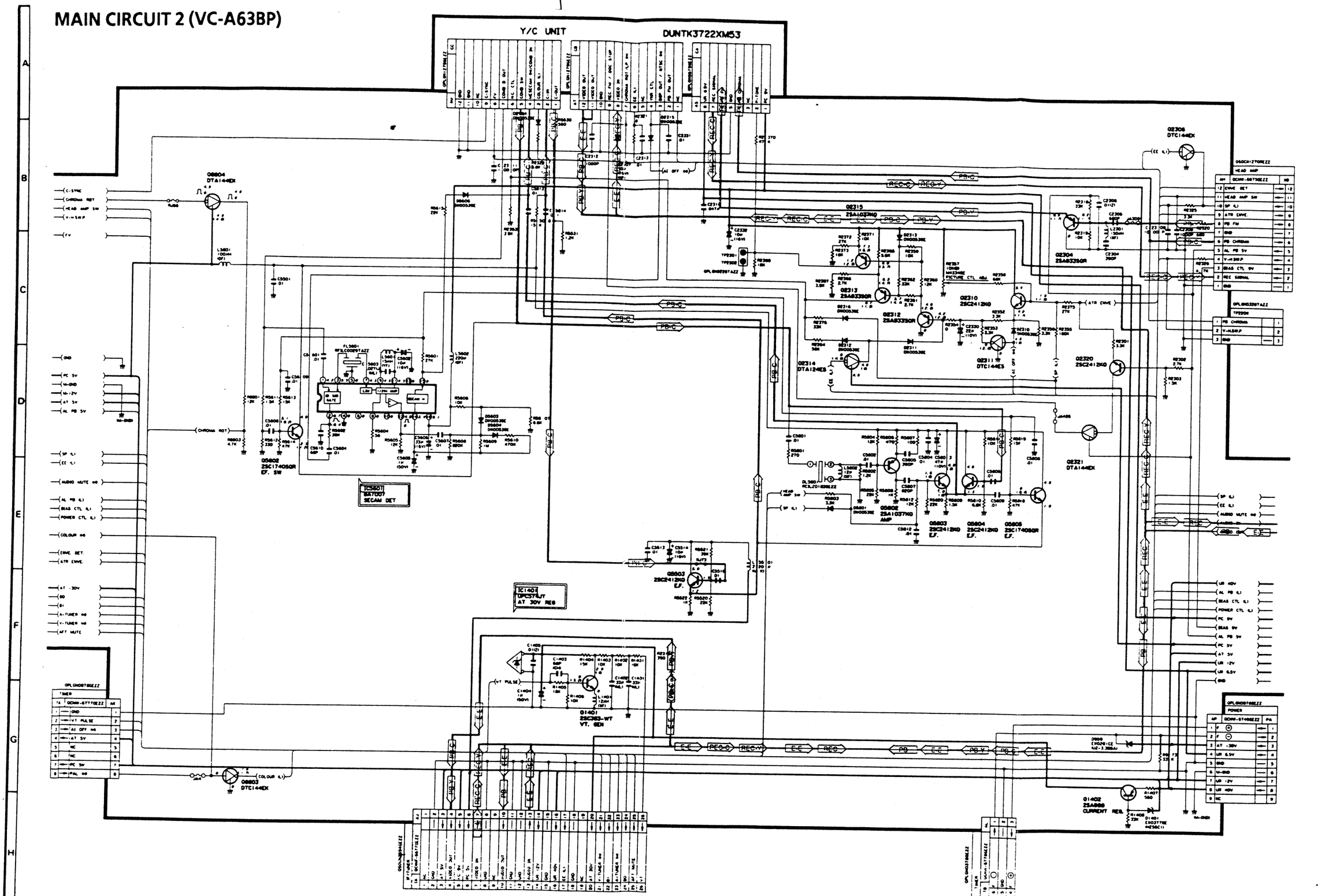

Y/C UNIT
DUNTK3722XM5D
Q6804
DTA144EX
IC5601
BA7007
SECAM DET
Q5602
2SC1740SQR
EF. SW
Q5503
2SC2412KQ
E.F.
IC1401
UPC574JT
AT 30V REG
Q1401
2SC383-WT
VT. GEN
Q5804
2SC2412KQ
E.F.
Q5805
2SC1740SQR
E.F.
Q2304
2SA933SQR
Q2320
2SC2412KQ
Q2321
DTA144EX
Q6803
DTC144EX
Q1402
2SA866
CURRENT REG.
HEAD AMP
TIMER
POWER
1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H

* VOLTAGE MEASUREMENT MODE

PB .... Parentheses ( )

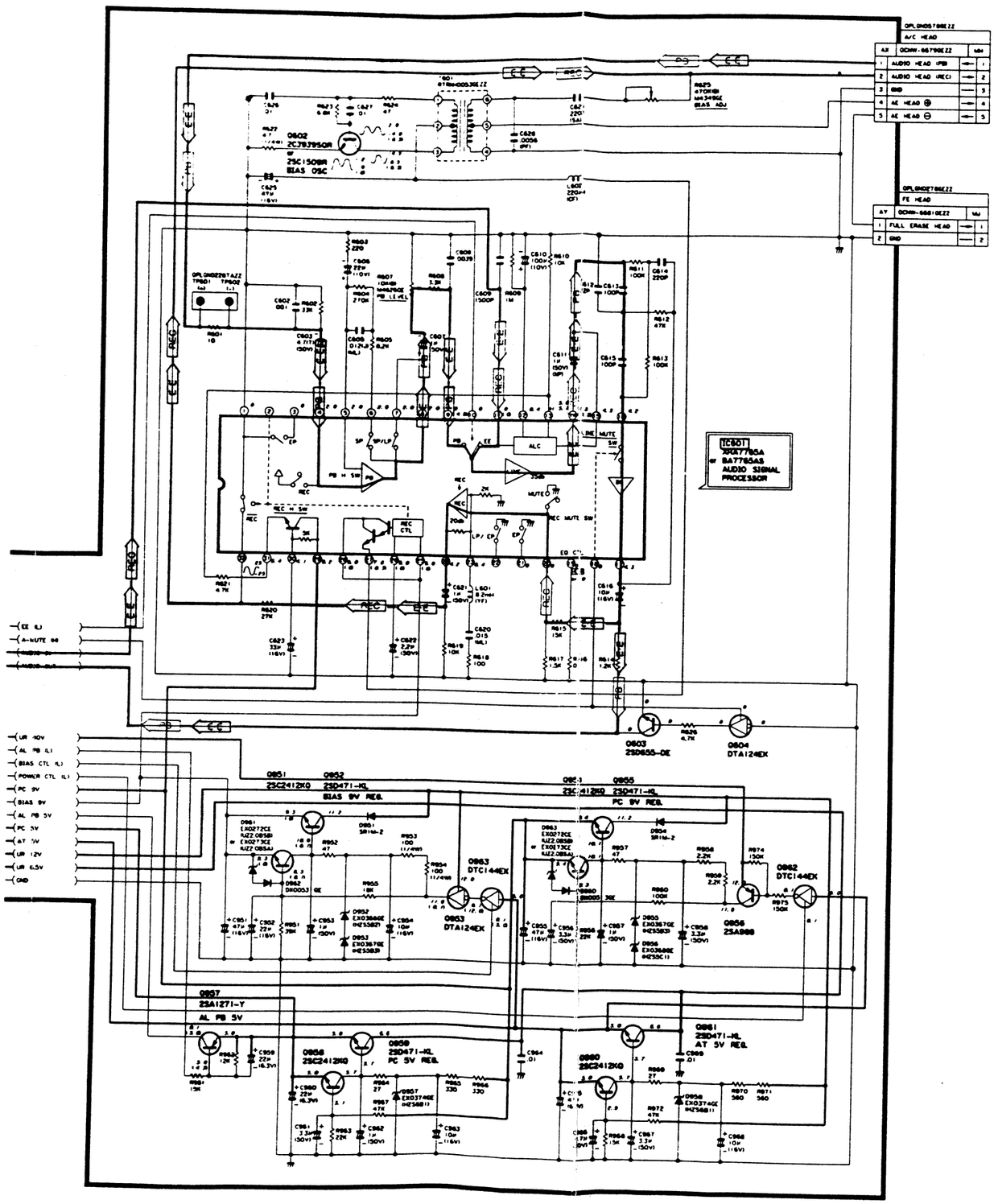
REC .... Without Parentheses

MAIN CIRCUIT 2 (VC-A63BP)



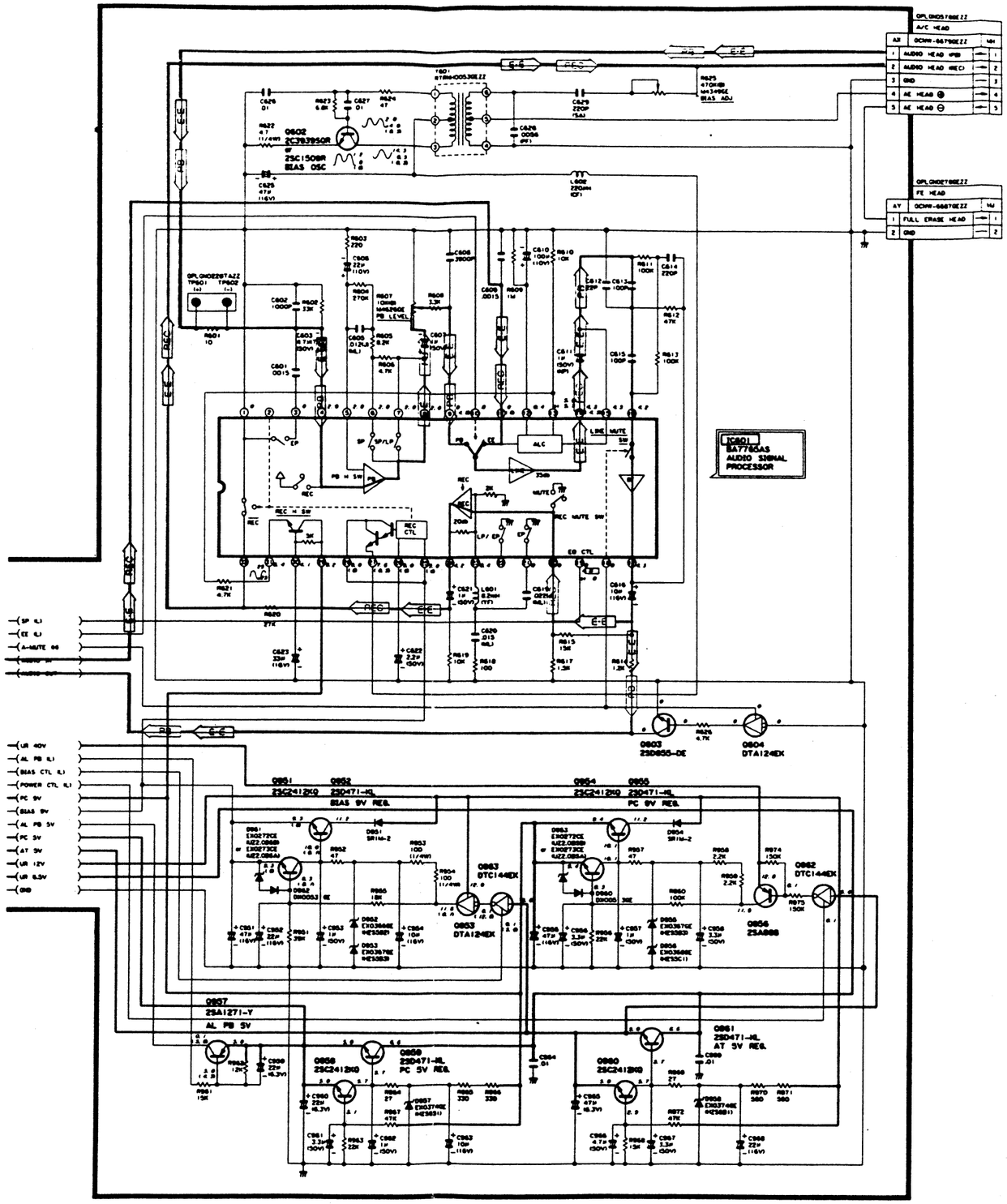
* VOLTAGE MEASUREMENT MODE
PB ..... Parentheses ( )
REC ..... Without Parentheses

MAIN CIRCUIT 3 (VC-A33BP)



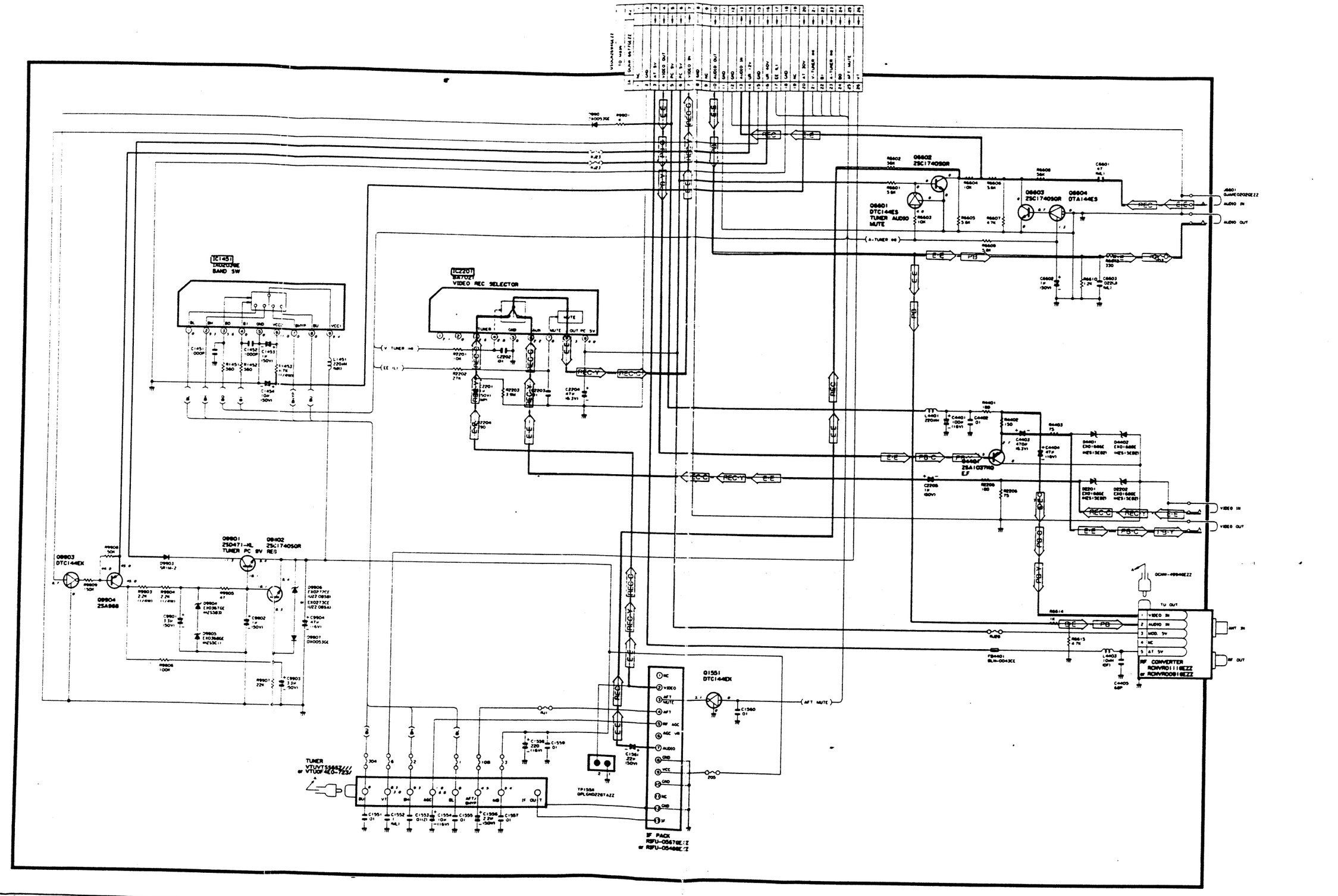
• VOLTAGE MEASUREMENT MODE
PB ..... Parentheses ( )
REC ..... Without Parentheses

MAIN CIRCUIT 3 (VC-A63BP)



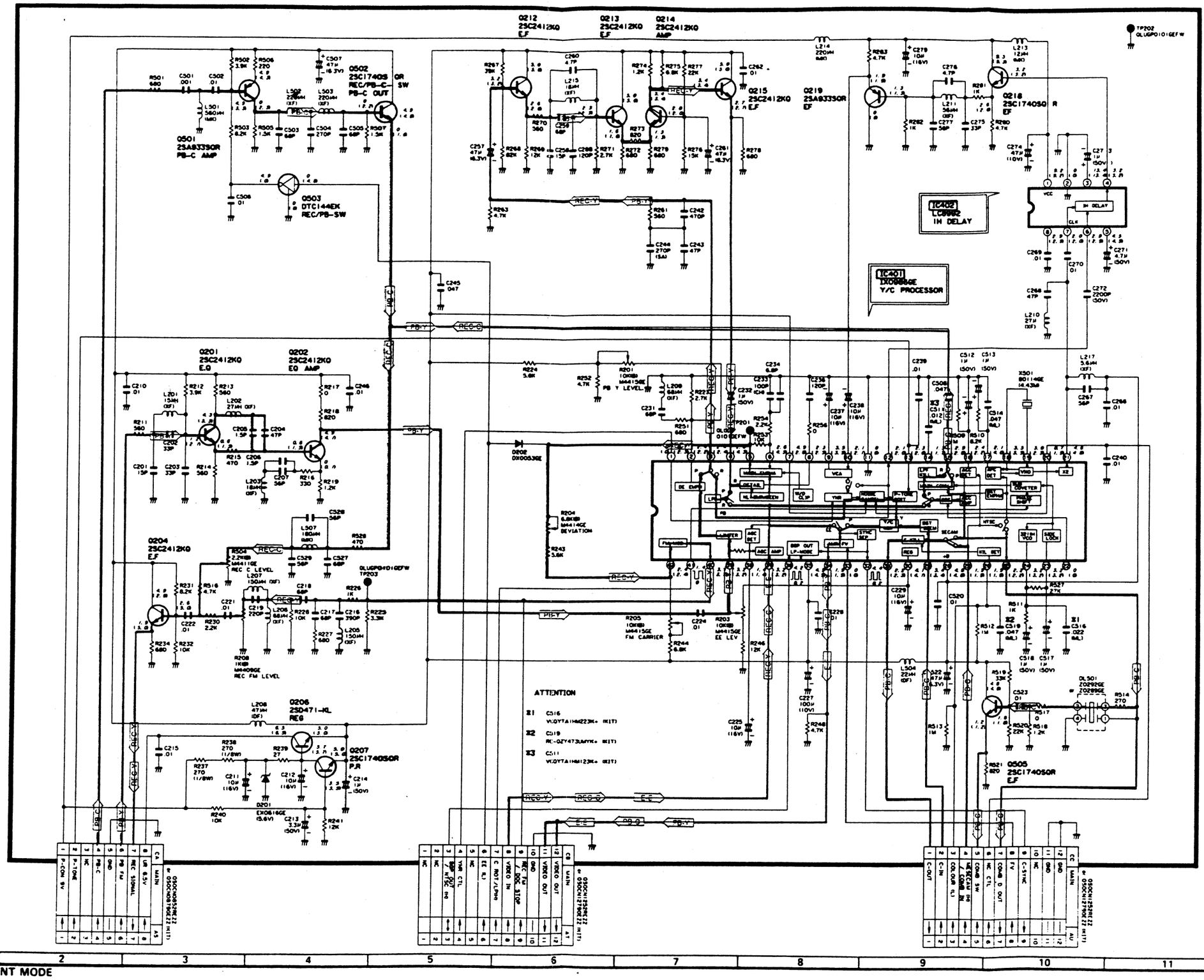
• VOLTAGE MEASUREMENT MODE
PB ..... Parentheses ( )
REC ..... Without Parentheses

IF / TUNER CIRCUIT



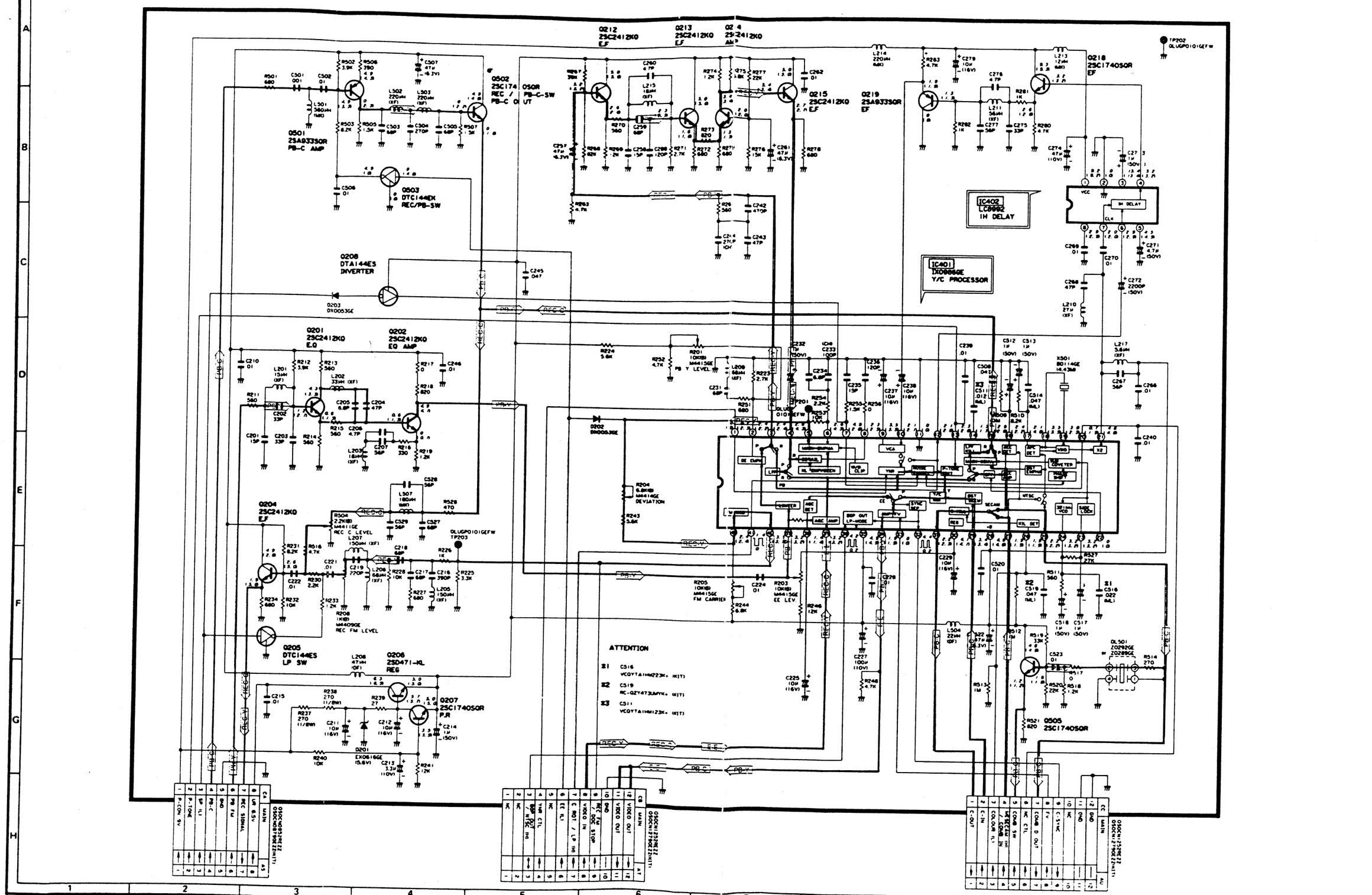
* VOLTAGE MEASUREMENT MODE
PB ..... Parentheses ( )
REC ..... Without Parentheses

Y/C CIRCUIT (VC-A33BP)



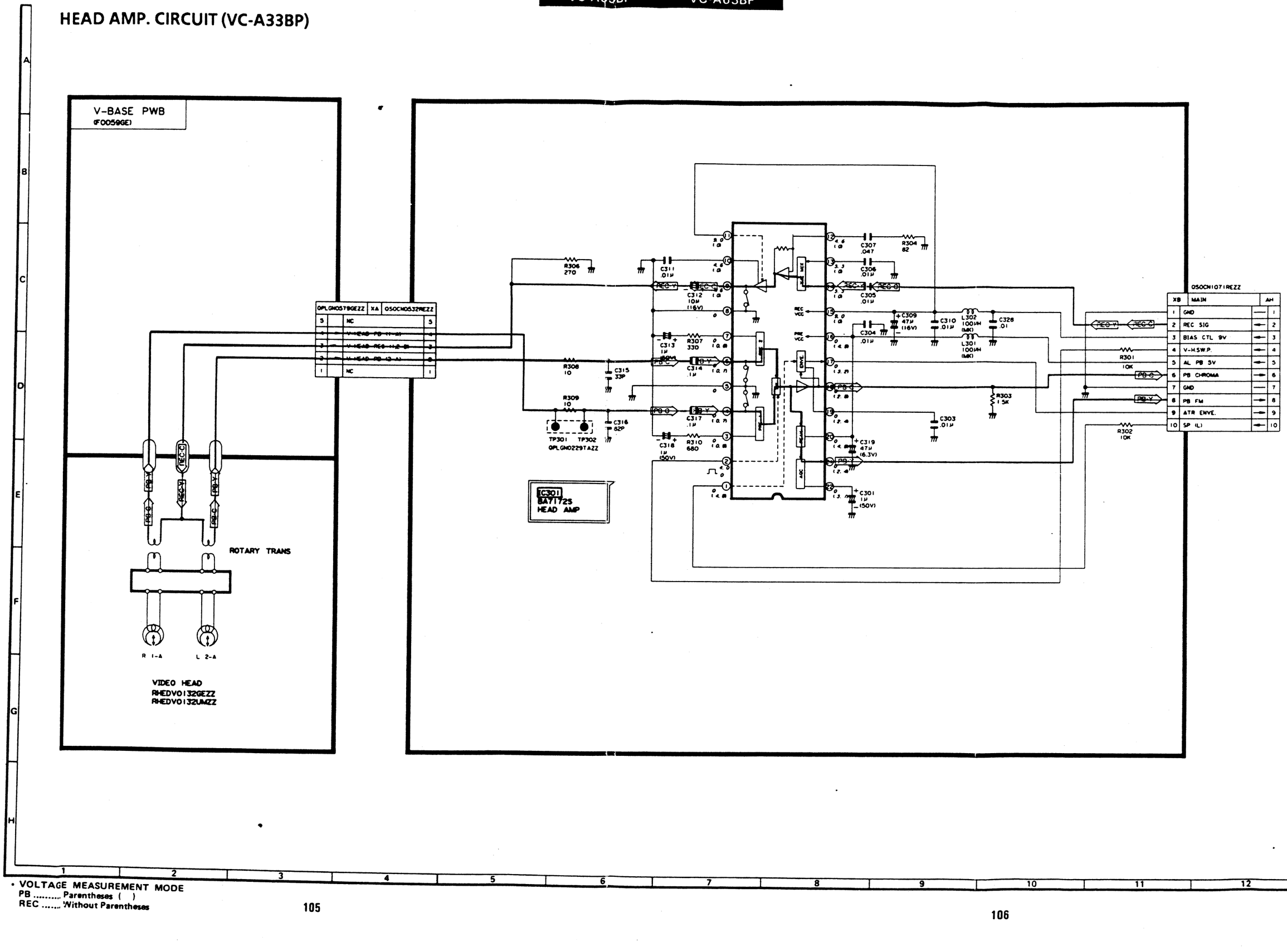
* VOLTAGE MEASUREMENT MODE
PB ..... Parentheses ( )
REC ..... Without Parentheses

Y/C CIRCUIT (VC-A63BP)



VC-A33BP
VC-A63BP

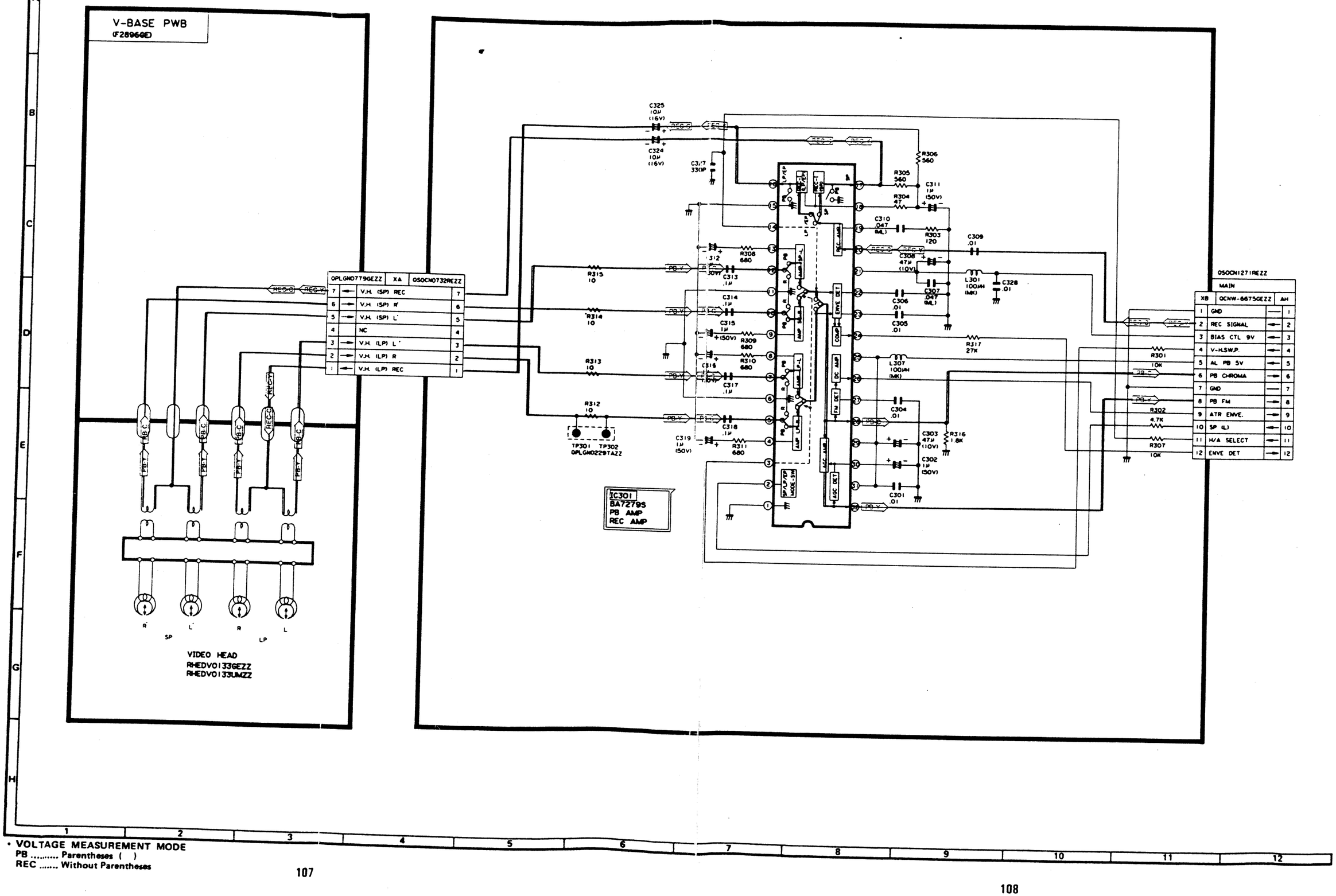
HEAD AMP. CIRCUIT (VC-A33BP)



• VOLTAGE MEASUREMENT MODE
PB ..... Parentheses ( )
REC ..... Without Parentheses

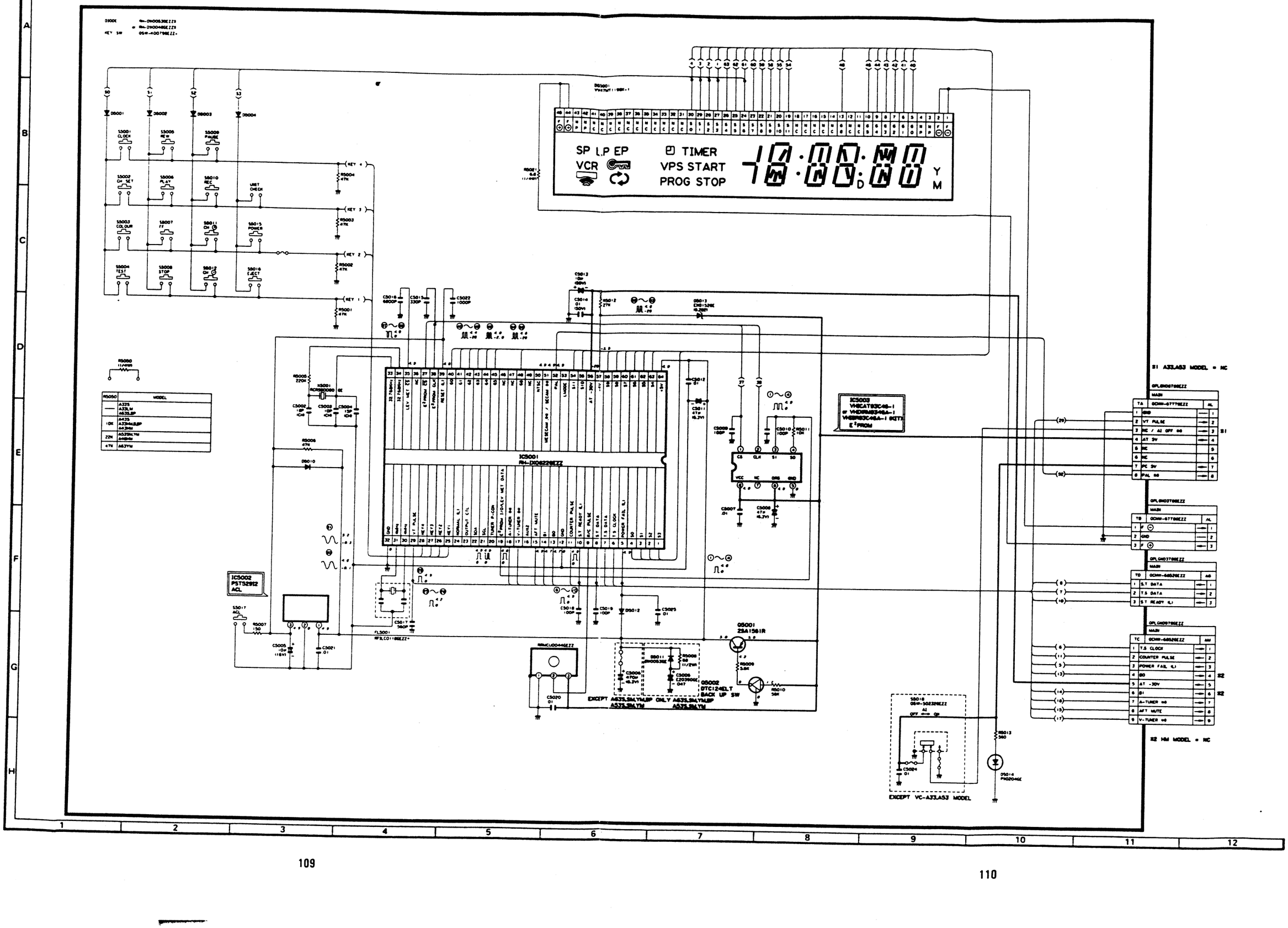
VC-A33BP
VC-A63BP

HEAD AMP. CIRCUIT (VC-A63BP)



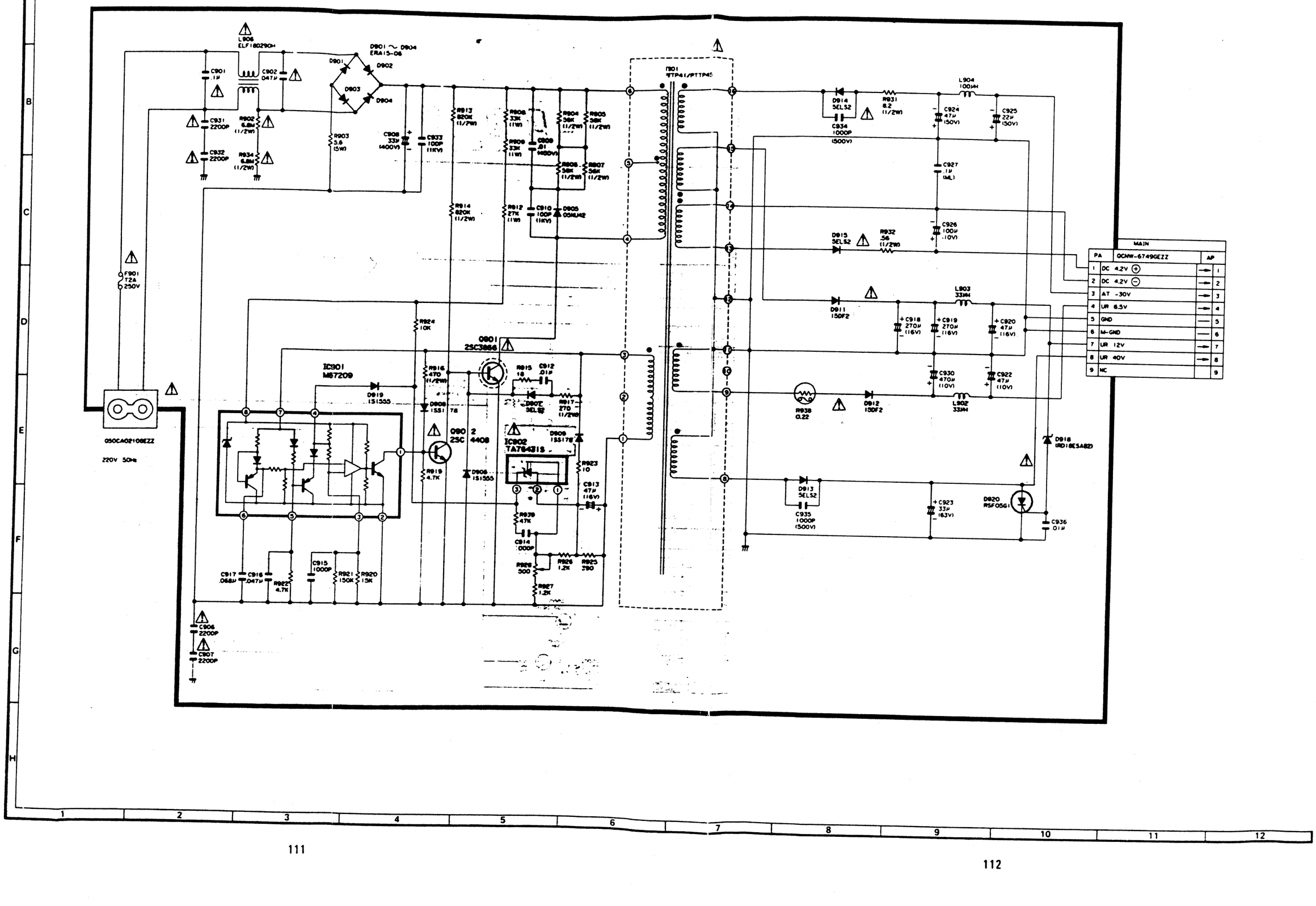
• VOLTAGE MEASUREMENT MODE
PB ..... Parentheses ( )
REC ..... Without Parentheses

TIMER CIRCUIT

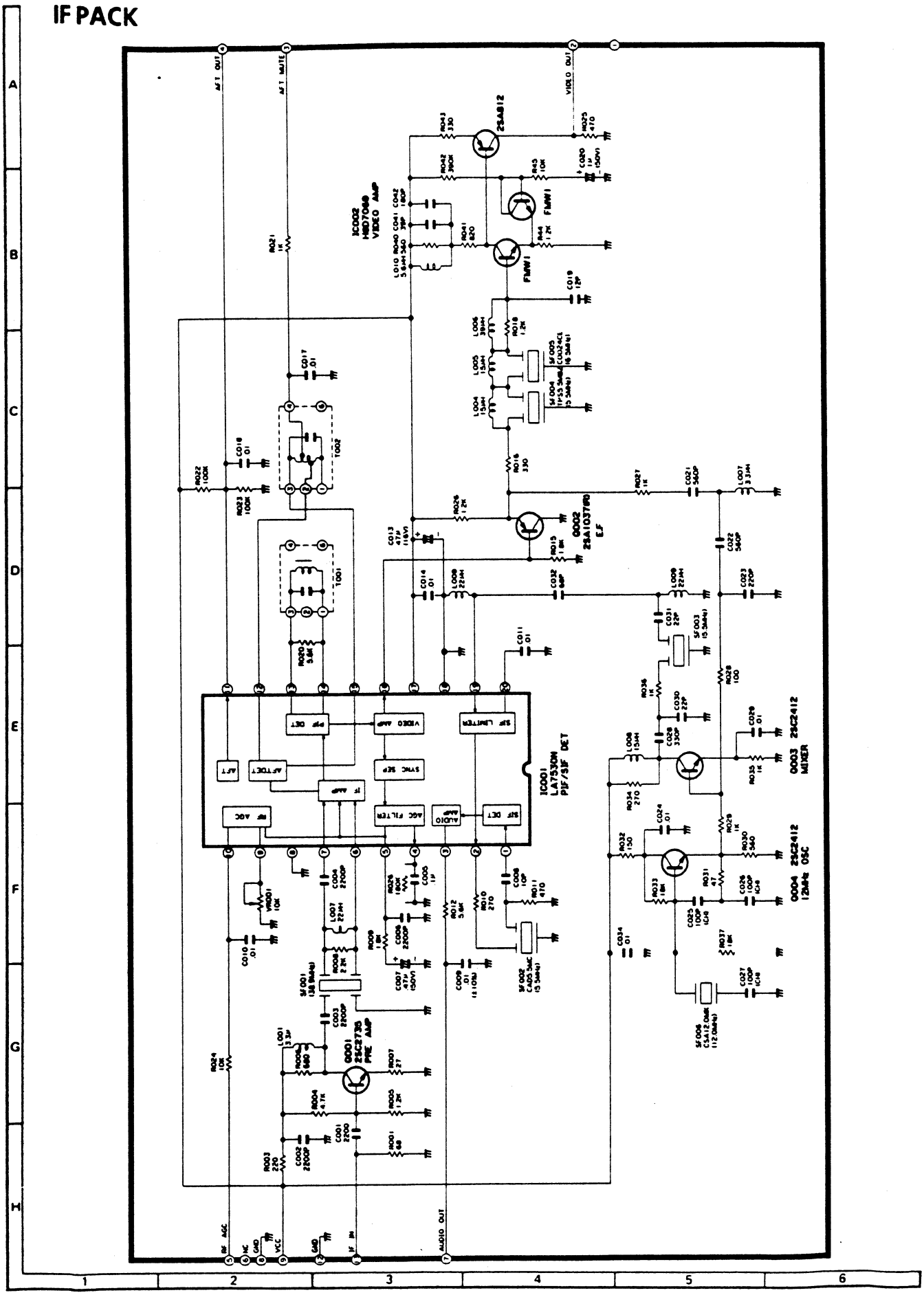


VC-A33BP
VC-A63BP

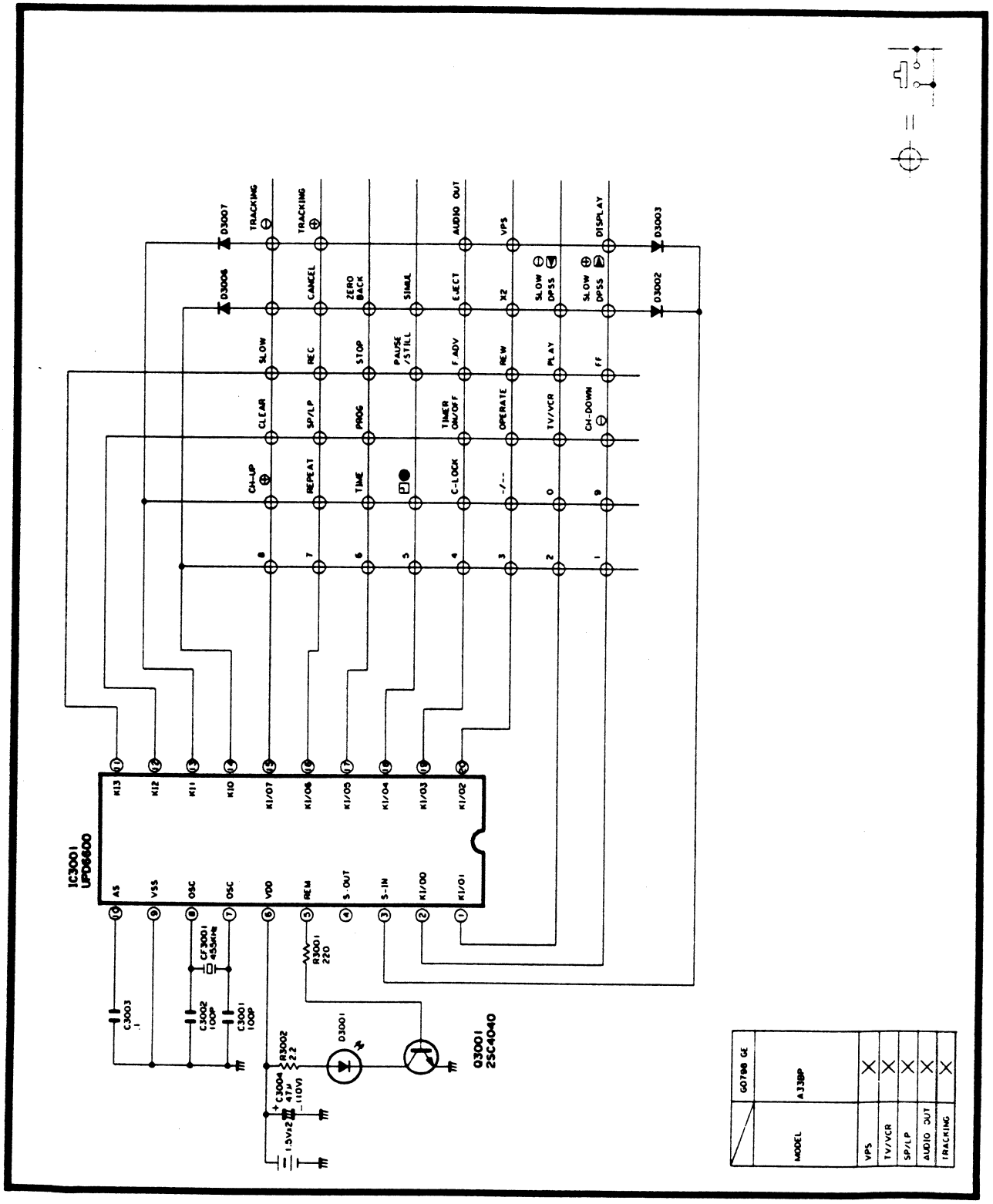
POWER CIRCUIT



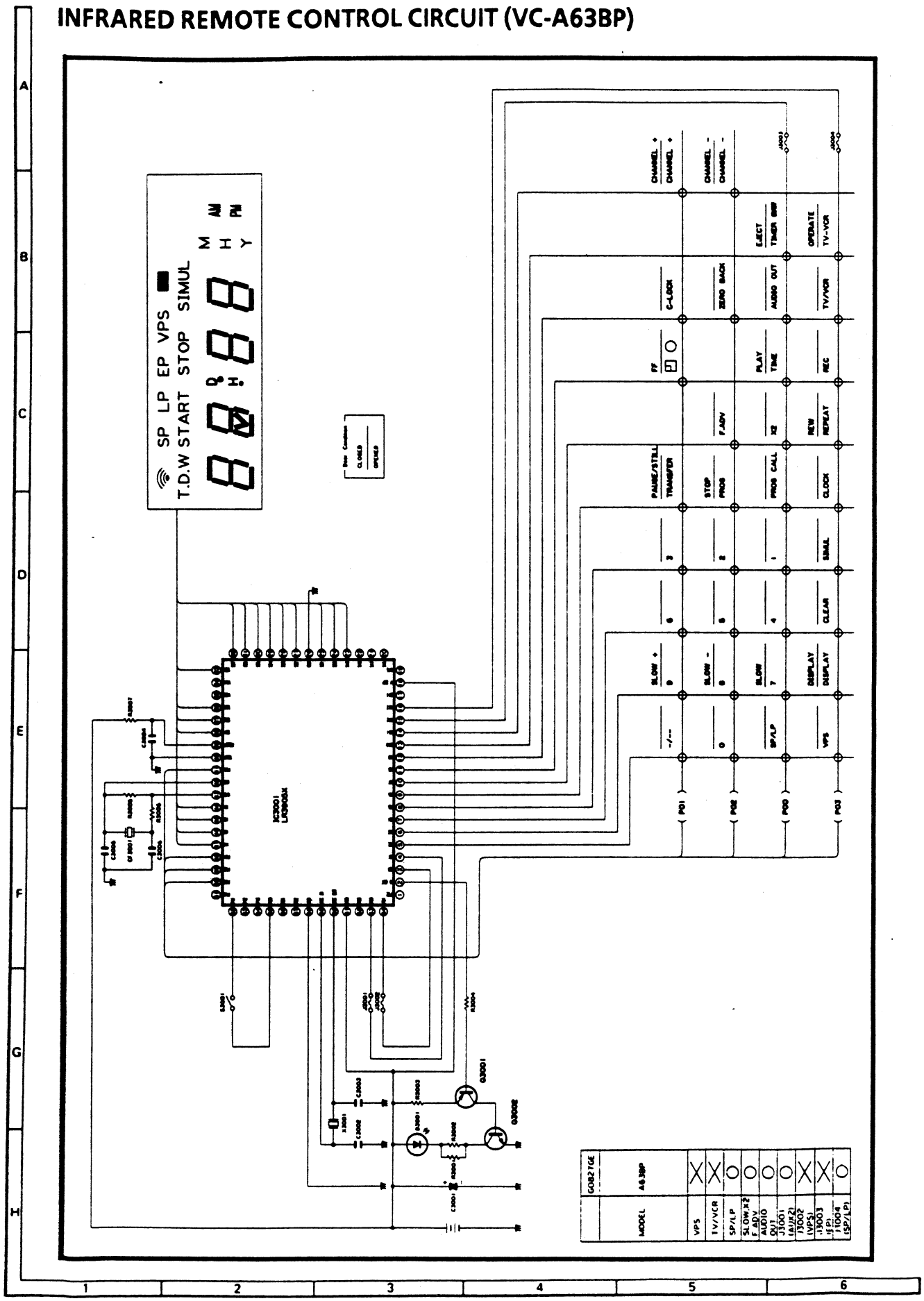
IF PACK


A
B
C
D
E
F
G
H
1
2
3
4
5
6
AFT OUT
AFT MUTE
VIDEO OUT
IC002
M52705SP
VIDEO AMP
2SA812
FMW1
0002
2SA1037(R)
EF
IC001
LA7530N
PIF/SIF DET
0001
2SC2735
PRE AMP
0003
2SC2412
MIXER
0004
2SC2412
12MHz OSC
RF AGC
MC
GND
VCC
GND
IF IN
AUDIO OUT

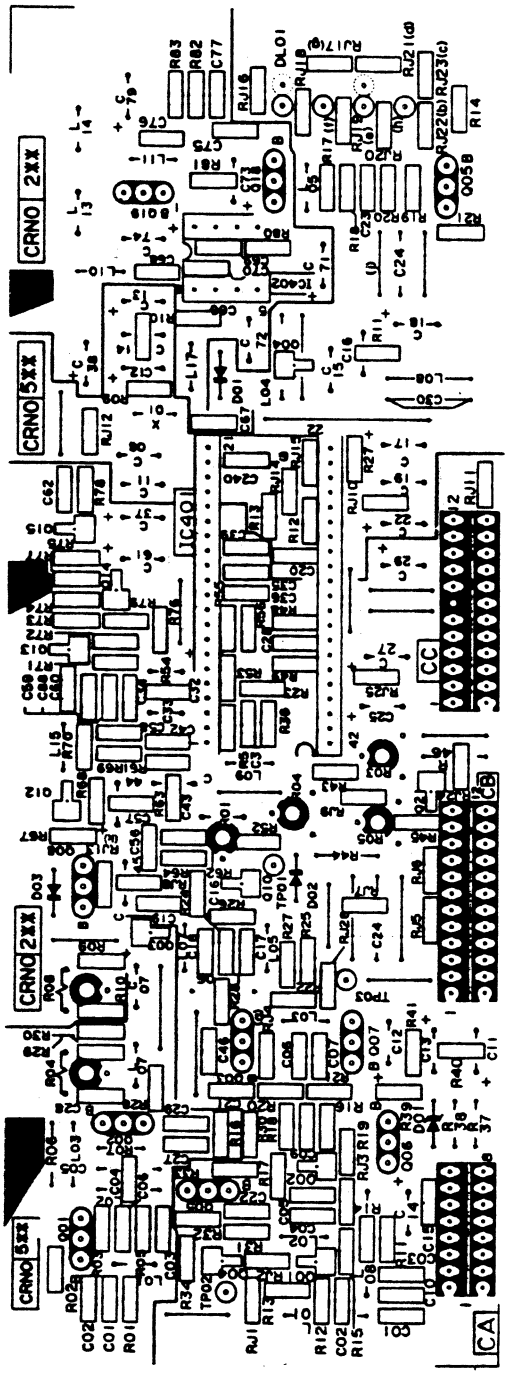
INFRARED REMOTE CONTROL CIRCUIT (VC-A33BP)



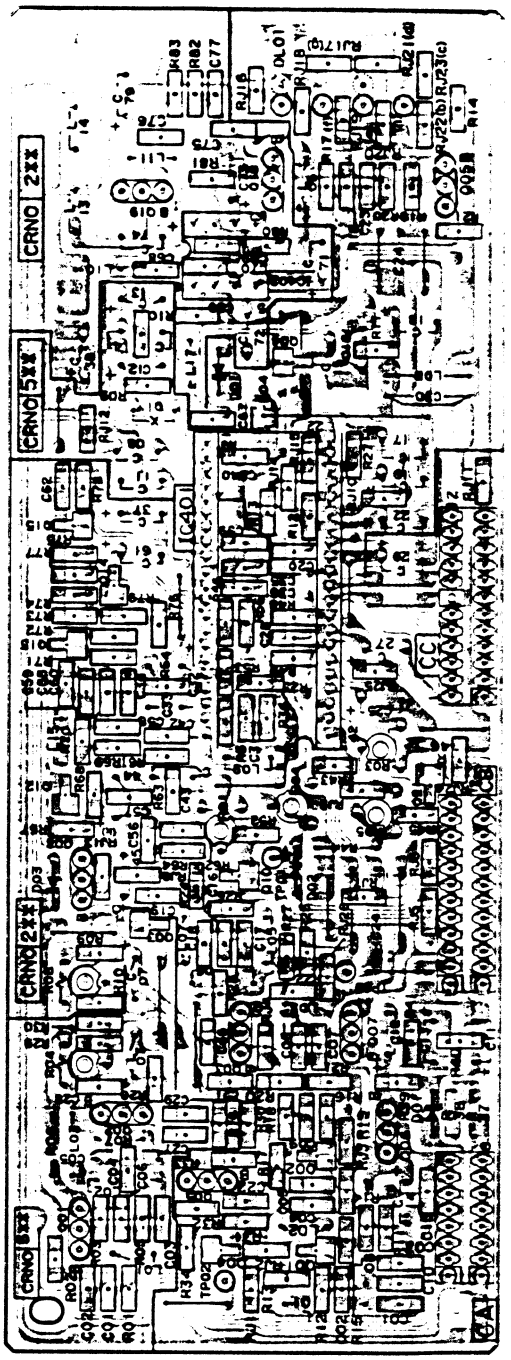
INFRARED REMOTE CONTROL CIRCUIT (VC-A63BP)



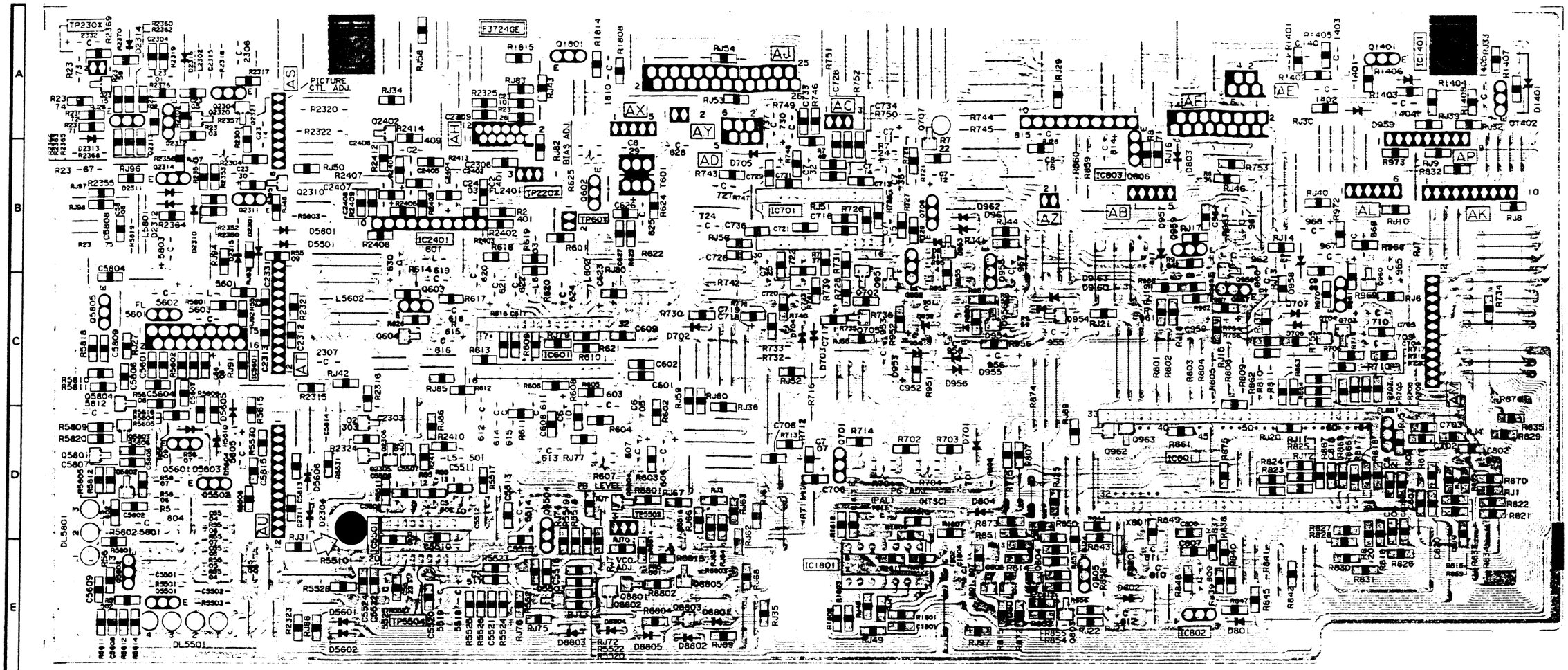
WIRING SIDE PWBs



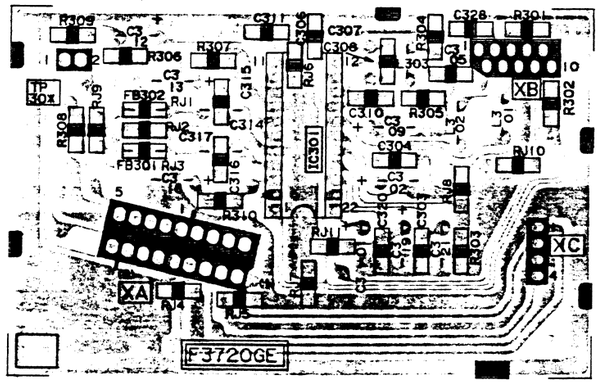
Y/C PWB (VC-A33BP)



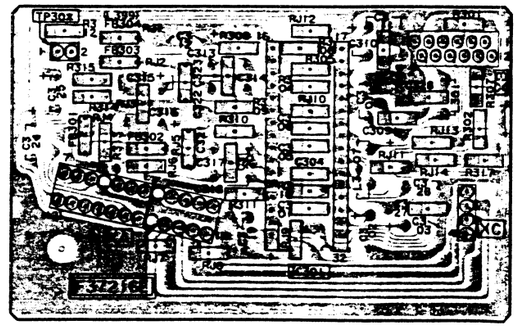
Y/C PWB (VC-A63BP)



MAIN PWB

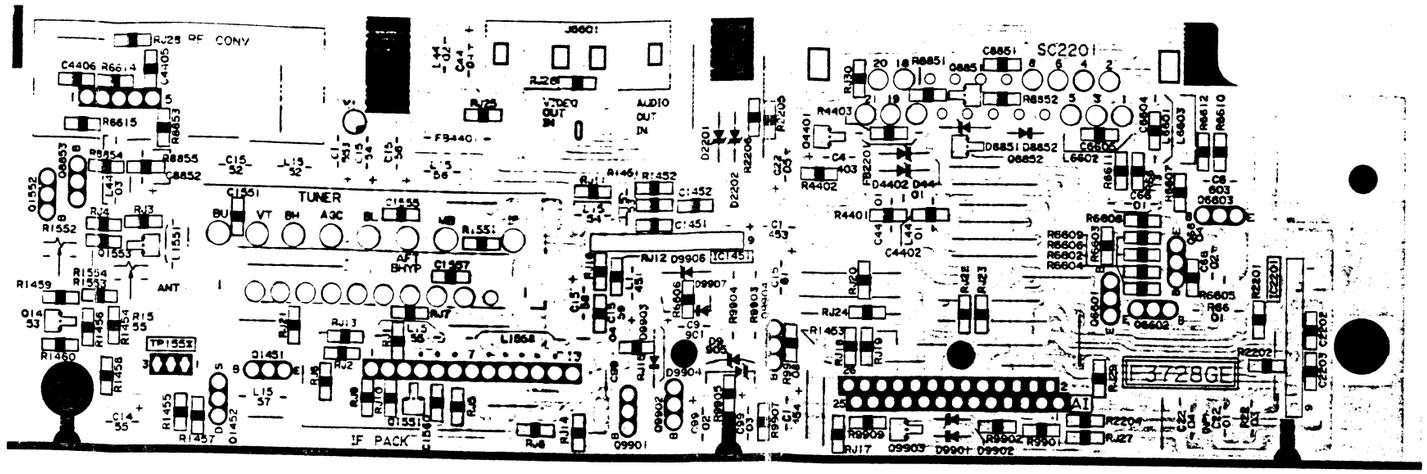


HEAD AMP. PWB (VC-A33BP)

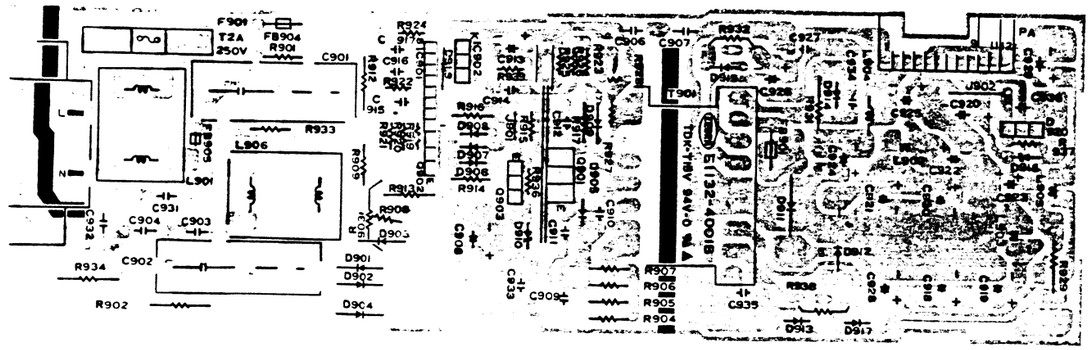


HEAD AMP. PWB (VC-A63BP)

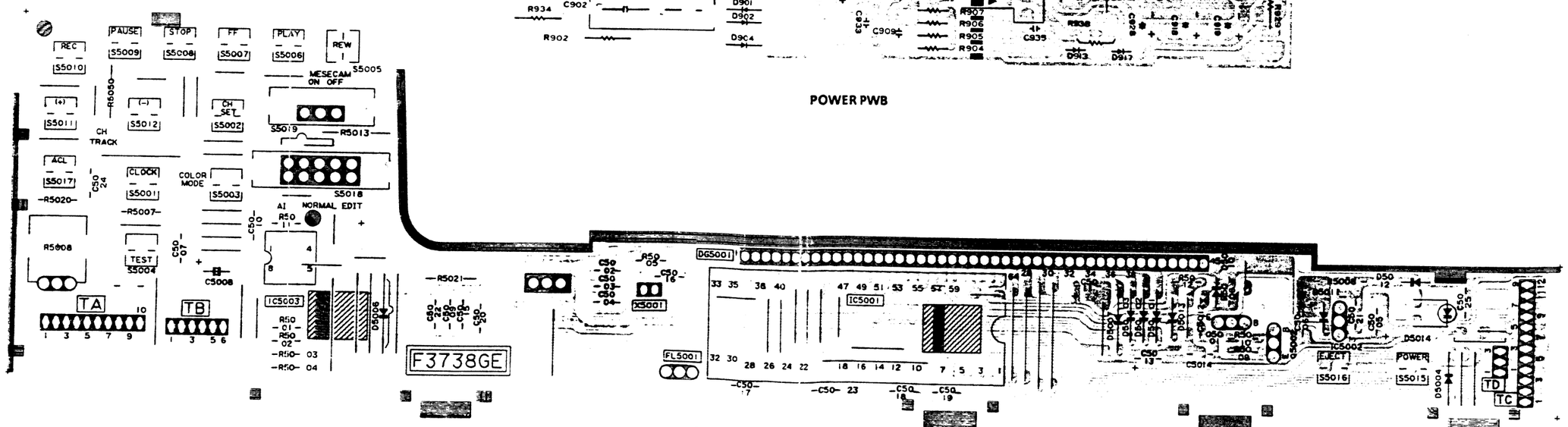
VC-A33BP
VC-A63BP



IF / TUNER PWB



POWER PWB



TIMER PWB

REPLACEMENT PARTS LIST

PARTS REPLACEMENT

Many electrical and mechanical parts in video cassette recorder have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by ⚠ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION
5. PRICE CODE

⚠ MARK: SAFETY RELATED PARTS

PWB ASSEMBLY IS NOT REPLACEMENT ITEM

Ref. No.	Part No.	Description	Code

MAIN (SERVO, SYSTEM-CONTROL, TUNER) CIRCUIT

	DUNTK3724XM63	Main Board Assembly (VC-A33BP)	—
	DUNTK3724XM68	Main Board Assembly (VC-A63BP)	—

TRANSISTORS

Q602	VS2C3939SQR-1	2SC3939SQR	AC
	or		
	VS2SC1509R/-1	2SC1509R	AD
Q603	VS2SD655-DE1E	2SD655-DE	AC
Q604, 953	VSDTA124EK/-1	DTA124EK	AB
Q701, 803, 804, 951, 954, 958, 960, 2310, 2320, 5503, 5803, 5804	VS2SC2412KQ-1	2SC2412KQ	AA
		(VC-A63BP)	
		(VC-A63BP)	
Q703, 704, 705, 707, 2315, 5802	VS2SA1037KQ-1	2SA1037KQ	AA
		(VC-A63BP)	
		(VC-A63BP)	
Q706, 805, 5602, 5805	VS2C1740SQR1E	2SC1740SQR	AC
Q806	VS2SC2001LK-1	2SC2001LK	AA
Q952, 955, 959, 961	VS2SD471-KL1E	2SD471-KL	AC
Q956, 1402	VS2SA988///1E	2SA988	AB
Q957	VS2SA1271-Y-1	2SA1271-Y	AB
Q962, 963, 2306, 8803	VSDTC144EK/-1	DTC144EK	AB
		(VC-A63BP)	
Q1401	VS2SC383-WT-1	2SC383-WT	AE
Q2304, 2312, 2313	VS2SA933SQR1E	2SA933SQR	AB
		(VC-A63BP)	
		(VC-A63BP)	
Q2311	VSDTC144ES/-1	DTC144ES (VC-A63BP)	AB
Q2314	VSDTA124ES/-1	DTA124ES (VC-A63BP)	AB
Q2321, 8804	VSDTA144EK/-1	DTA144EK	AC

INTEGRATED CIRCUITS

IC601	VHiBA7765AS-1		AL
	or		
	VHiXRA7765A-1		AH
IC701	RH-iX0981GEZZ		AH
IC801	RH-iX0725GEZZ		AX
	or		
	RH-iX0723GEZZ		AX
IC802	VHiPST529D2-1		AD
IC803	VHiBA6209//-1		AK
IC1401	VHiUPC574JT-1		AC
IC5601	VHiBA7007//-1		AM

DIODES AND CRYSTAL

Ref. No.	Part No.	Description	Code
D702	RH-DX0053GEZZ	1SS132	AA
|			
707,			
801,			
802,			
803,			
960,			
962,			
2304,			
2310,		(VC-A63BP)	
2311,		(VC-A63BP)	
2312,			
2313,		(VC-A63BP)	
2315,		(VC-A63BP)	
2316,		(VC-A63BP)	
5603,			
5604,			
5606,			
5801		(VC-A63BP)	
D951, 954	VHDSR1M-2//-1	SR1M-2	AA
D952	RH-EX0366GEZZ	HZS5B2	AA
D953, 955	RH-EX0367GEZZ	HZS5B3	AA
D956	RH-EX0368GEZZ	HZS5C1	AA
D957, 958	RH-EX0374GEZZ	HZS6B1	AA
D959	RH-EX0281CEZZ	UZ-3.3BSA	AA
D961, 963	RH-EX0272CEZZ	UZ2.0BSB	AA
	or		
	RH-EX0273CEZZ	UZ2.0BSA	AA
D1401	RH-EX0377GEZZ	HZS6C1	AA
X801	RCRSB0136GEZZ	Crystal, 7.16MHz	AF

CONTROLS

Ref. No.	Part No.	Description	Code
R607	RVR-M4626GEZZ	10k(B), PB Level Adj.	AB
R625	RVR-M4349GEZZ	470k(B), Bias Adj.	AB
R701	RVR-M4632GEZZ	100k(B), PG Adj.	AB
R2357	RVR-M4334GEZZ	10k(B), Picture CTL Adj. (VC-A63BP)	AB

COILS AND TRANSFORMER

Ref. No.	Part No.	Description	Code
L601	VP-YF822J0000	8.2mH	AC
L602	VP-CF221K0000	220µH	AB
L1401, 5802	VP-XF120K0000	12µH (VC-A63BP)	AB
L2301	VP-XF151K0000	150µH	AB
L5501	VP-MK221K0000	220µH	AB
L5601	VP-YF153J0000	15mH	AC
L5602	VP-DF221K0000	220µH	AB
L5801	VP-DF101K0000	100µH	AB
FL5601	RFiLC0029TAZZ	Filter	AD
DL5801	RCiLZ0183GEZZ	Delay Line (VC-A63BP)	AK
T601	RTRNH0053GEZZ	Osc. Transformer	AE

CAPACITORS

Ref. No.	Part No.	Description	Code
C605	RC-QZA123TAYJ	0.012µF, 50V, 5%, Mylar	AB
C610	VCEAEA1AW107M	100µF, 10V, 20%, Electrolytic	AB
C611, 722	VCE9EA1HW105M	1µF, 50V, 20%, Electrolytic (N.P.)	AC
C619	RC-QZA223TAYJ	0.022µF, 50V, 5%, Mylar (VC-A63BP)	AB
C620	VCQYWA1HA153J	0.015µF, 50V, 5%, Mylar	AA
C628	VCQPSA2AA562J	5600pF, 100V, 5%, Polypro Film	AC
C629	VCRYPA1HA221J	220pF, 50V, 5%, Mylar	AB
C701, 715	VCFYSA1HB473J	0.047µF, 50V, 5%, Mylar	AA
C710, 714, 801	VCEAEA0JW107M	100µF, 6.3V, 20%, Electrolytic	AB
C717	VCE9EA1HW225M	2.2µF, 50V, 20%, Electrolytic (N.P.)	AB
C727	VCFYSA1HB104J	0.1µF, 50V, 5%, Mylar	AB
C732	VCE9EA1CW226M	22µF, 16V, 20%, Electrolytic (N.P.)	AC
C735	RC-QZA103TAYJ	0.01µF, 50V, 5%, Mylar	AB
C814	VCEAEA1CW107M	100µF, 16V, 20%, Electrolytic	AC
C815	RC-KZ0017GEZZ	0.047µF, 16V, Ceramic	AA
C816	VCE9EA1HW335M	3.3µF, 50V, 20%, Electrolytic (N.P.)	AB
C1401, 1402	VCFYSA1HB334J	0.33µF, 50V, 5%, Mylar	AB
C2307	VCE9EA1CW106M	10µF, 16V, 20%, Electrolytic (N.P.)	AC
C5603	RC-QZA273TAYJ	0.027µF, 50V, 5%, Mylar	AB

MISCELLANEOUS

Part No.	Description	Code
QPLGN0228TAZZ	Plug, 2 pin (TP601-602, TP2301-2302 (VC-A63BP))	AB
QPLGN0278GEZZ	Plug, 2 pin (AY)	AA
QPLGN0328TAZZ	Plug, 3 pin (TP2201-2203)	AD
QPLGN0378GEZZ	Plug, 3 pin (AC, AG, AL)	AB
QPLGN0578GEZZ	Plug, 5 pin (AB, AX)	AB
QPLGN0878GEZZ	Plug, 8 pin (AK)	AC
QPLGN0879GEZZ	Plug, 8 pin (AS)	AB
QPLGN0978GEZZ	Plug, 9 pin (AM, AP)	AC
QPLGN1279GEZZ	Plug, 12 pin (AT, AU)	AC
QSOCN0594GEZZ	Socket, 5 pin (AE)	AB

Ref. No.	Part No.	Description	Code
	QSOCN0694GEZZ	Socket, 6 pin (AD)	AB
	QSOCN1070REZZ	Socket, 10 pin (AH) (VC-A33BP)	AB
	QSOCN1270REZZ	Socket, 12 pin (AH) (VC-A63BP)	AC
	QSOCN1594GEZZ	Socket, 15 pin (AF)	AD
	QSOCN2694GEZZ	Socket, 26 pin (AJ)	AD

IF/TUNER CIRCUIT

	DUNTK3728XM61	IF/Tuner Board Assembly	—

TRANSISTORS

Q1551, 9903	VSDTC144EK/-1	DTC144EK	AB
Q4401	VS2SA1037KQ-1	2SA1037KQ	AA
Q6601	VSDTC144ES/-1	DTC144ES	AB
Q6602, 6603, 9902	VS2C1740SQR1E	2SC1740SQR	AC
Q6604	VSDTA144ES/-1	DTA144ES	AB
Q9901	VS2SD471-KL1E	2SD471-KL	AC
Q9904	VS2SA988///1E	2SA988	AB

INTEGRATED CIRCUITS

IC1451	RH-iX0203GEZZ		AE
IC2201	VHiBA7021//-1		AE

DIODES

D2201, 2202, 4401, 4402	RH-EX0168GEZZ	HZS15EB2	AA
D9901, 9907	RH-DX0053GEZZ	1SS132	AA
D9903	VHDSR1M-2//-1	SR1M-2	AA
D9904	RH-EX0367GEZZ	HZS5B3	AA
D9905	RH-EX0368GEZZ	HZS5C1	AA
D9906	RH-EX0272CEZZ	UZ2.0BSB	AA
	or		
	RH-EX0273CEZZ	UZ2.0BSA	AA

COILS

L1451, 4401	VP-MK221K0000	220µH	AB
L4403	VP-DF100K0000	10µH	AB

Ref. No.	Part No.	Description	Code

CAPACITORS

C1552	VCFYSA1HB104J	0.1µF, 50V, 5%, Mylar	AB
C1558	VCEA2A1CW227M	220µF, 16V, 20%, Electrolytic	AB
C2201	VCE9EA1HW105M	1µF, 50V, 20%, Electrolytic (N.P.)	AC
C4401	VCEAEA1CW107M	100µF, 16V, 20%, Electrolytic	AC
C4403	VCEA2A0JW477M	470µF, 6.3V, 20%, Electrolytic	AB
C6601	VCFYHA1HA474J	0.47µF, 50V, 5%, Mylar	AD
C6603	RC-QZA223TAYJ	0.022µF, 50V, 5%, Mylar	AB

MISCELLANEOUS

	RiFU-0567GEZZ	IF-PACK	AX
	RCNVR0111GEZZ	RF Converter	BA
	or		
	RCNVR0091GEZZ		BA
	VTUVTSS6SZ///	VHF Tuner	BA
FB4401	RBLN-0043CEZZ	Ferrite Bead	AB
J6601	QJAKE0202GEZZ	Jack, Audio IN/OUT, Video IN/OUT	AE
	QPLGN0228TAZZ	Plug, 2 pin (TP1551-1552)	AB
	QSOCN2694GEZZ	Socket, 26 pin (IA)	AD

Y/C CIRCUIT

	DUNTK3722XM50	Y/C Board Assembly (VC-A33BP)	—
	DUNTK3722XM53	Y/C Board Assembly (VC-A63BP)	—

TRANSISTORS

Q201, 202, 204, 212 | 215	VS2SC2412KQ-1	2SC2412KQ	AA
Q205	VSDTC144ES/-1	DTC144ES (VC-A63BP)	AB
Q206	VS2SD471-KL1E	2SD471-KL	AC
Q207, 218, 502, 505	VS2C1740SQR1E	2SC1740SQR	AC
Q208	VSDTA144ES/-1	DTA144ES (VC-A63BP)	AB
Q219, 501	VS2SA933SQR1E	2SA933SQR	AB
Q503	VSDTC144EK/-1	DTC144EK	AB

Ref. No.	Part No.	Description	Code
INTEGRATED CIRCUITS			
IC401	RH-iX0986GEZZ		AV
IC402	VHiLC8992//-1		AK
DIODES AND CRYSTAL			
D201	RH-EX0616GEZZ	Zener Diode	AA
D202, 203	RH-DX0053GEZZ	1SS132 (VC-A63BP)	AA
X501	RCRSB0114GEZZ	Crystal, 4.43MHz	AG
CONTROLS			
R201, 203, 205	RVR-M4415GEZZ	10k(B), PB Y Level Adj. 10k(B), EE Level Adj. 10k(B), FM Carrier Adj.	AB
R204	RVR-M4414GEZZ	6.8k(B), Deviation Adj.	AB
R208	RVR-M4409GEZZ	1k(B), REC FM Level Adj.	AB
R504	RVR-M4411GEZZ	2.2k(B), REC C Level Adj.	AB
COILS			
DL501	RCiLZ0292GEZZ or RCiLZ0289GEZZ	Delay Line	AP AP
L201	VP-XF150K0000	15µH	AB
L202	VP-XF330K0000	33µH	AB
L203, 215	VP-XF180K0000	18µH	AB
L205, 207	VP-XF151K0000	150µH	AB
L206, 209	VP-XF680K0000	68µH	AB
L208	VP-DF470K0000	47µH	AB
L210	VP-XF270K0000	27µH	AB
L211	VP-XF560K0000	56µH	AB
L213	VP-MK120K0000	12µH	AB
L214	VP-MK221K0000	220µH	AB
L217	VP-XF5R6K0000	5.6µH	AB
L501	VP-MK561K0000	560µH	AB
L502, 503	VP-XF221K0000	220µH	AB
L504	VP-DF220KOOOO	22µH	AB
L507	VP-MK181K0000	180µH	AB
CAPACITORS			
C227	VCEAEA1AW107M	100µF, 10V, 20%, Electrolytic	AB
C245, 508	RC-KZ0017GEZZ	0.047µF, 16V, Ceramic	AA

Ref. No.	Part No.	Description	Code
C511	RC-QZA123TAYJ	0.012µF, 50V, 5%, Mylar	AB
C514, 519	VCFYSA1HB473J	0.047µF, 50V, 5%, Mylar	AA
C516	RC-QZA223TAYJ	0.022µF, 50V, 5%, Mylar	AB
MISCELLANEOUS			
	QSOCN0852REZZ	Socket, 8 pin (CA)	AB
	QSOCN1252REZZ	Socket, 12 pin (CB, CC)	AC
HEAD AMP. CIRCUIT			
	DUNTK3720XM50	Head Amp. Board Assembly (VC-A33BP)	—
	DUNTK3721XM54	Head Amp. Board Assembly (VC-A63BP)	—
INTEGRATED CIRCUIT			
IC301	VHiBA7172S/-1	(VC-A33BP)	AH
IC301	VHiBA7279S/-1	(VC-A63BP)	AL
COILS			
L301, 302, 307	VP-MK101K0000	100µH (VC-A33BP) (VC-A63BP)	AB
CAPACITORS			
C307, 310	VCFYSA1HB473J	0.047µF, 50V, 5%, Mylar (VC-A63BP)	AA
C313, 314, 317, 318	RC-KZ0029GEZZ	0.1µF, Ceramic (VC-A63BP)	AA
MISCELLANEOUS			
	QPLGN0229TAZZ	Plug, 2 pin (TP301-302)	AB
	QSOCN0532REZZ	Socket, 5 pin (XA) (VC-A33BP)	AB
	QSOCN0732REZZ	Socket, 7 pin (XA) (VC-A63BP)	AC
	QSOCN1071REZZ	Socket, 10 pin (XB) (VC-A33BP)	AB
	QSOCN1271REZZ	Socket, 12 pin (XB) (VC-A63BP)	AC

Ref. No.	Part No.	Description	Code

TIMER CIRCUIT

	DUNTK3738HE61	Timer Board Assembly (VC-A33BP)	—
	DUNTK3738HE65	Timer Board Assembly (VC-A63BP)	—

TRANSISTORS

Q5001	VS2SA1561R/1E	2SA1561R	AB
Q5002	VSDTC124ELT-1	DTC124ELT	AA

INTEGRATED CIRCUITS

IC5001	RH-iX0822GEZZ		AW
IC5002	VHiPST529i2-1		AD
IC5003	VHiCAT93C46-1		AN
	or		
	VHiXRM9346A-1		AK

DIODES AND CRYSTAL

D5001	RH-DX0053GEZZ	1SS132	AA
|	or		
5004, 5010, 5011, 5012	RH-DX0048GEZZ	1N4531 (VC-A63BP)	AA
D5013	RH-EX0152GEZZ	9.2B2	AA
D5014	RH-PX0204GEZZ	Photodiode	AB
X5001	RCRSB0090GEZZ	Crystal	AE

FILTER

FL5001	RFiLC0118GEZZ		AC

CAPACITOR

C5006	VCEA2A0JW477M	470µF, 6.3V, 20%, Electrolytic (VC-A33BP)	AB
C5006	RC-EZ0390GEZZ	0.047F, 5.5V, +80% – 20%, Electrolytic (VC-A63BP)	AF

MISCELLANEOUS

DG5001	VVK7MT119GK-1	Fluorescent Display Tube	AU
	QPLGN0378GEZZ	Plug, 3 pin (TB, TD)	AB
	QPLGN0878GEZZ	Plug, 8 pin (TA)	AC
	QPLGN0978GEZZ	Plug, 9 pin (TC)	AC
	RRMCU0044GEZZ	Remote Receiver	AL

Ref. No.	Part No.	Description	Code
S5001, 5002, 5003, 5004, 5005, 5006, 5007, 5008, 5009, 5010, 5011, 5012, 5015, 5016, 5017	QSW-K0079GEZZ	Switch, Clock Switch, Channel Set Switch, Colour Switch, Test Switch, Rewind Switch, Playback Switch, Fast Forward Switch, Stop Switch, Pause Switch, Recording Switch, Channel Up Switch, Channel Down Switch, Power Switch, Eject Switch, ACL	AB
S5018	QSW-S0232GEZZ	Switch, AI Picture (VC-A63BP)	AD

POWER CIRCUIT

	RDENC0485GEZZ	Power Board Assembly	—

TRANSISTORS

⚠Q901	95KUAC0234AZ	2SC3866	AH
⚠Q902	95KUAC0214AK	2SC4408	AD

INTEGRATED CIRCUITS

⚠IC901	95KUCH0078ZZ		AM
⚠IC902	95KUCC0043AK		AE

DIODES

⚠D901	95KUBC0125DK	ERA15-06V1	AB
| ⚠ 904			
⚠D905	95KUBC0248AK	05NU42	AC
⚠D906, ⚠ 919	95KUBC0249AK	1S1555	AA
⚠D907, 913, ⚠ 914, ⚠ 915	95KUBC0250AK	5ELS2	AC
⚠D908, ⚠ 909	95KUBA0033AK	1SS178	AA
⚠D911, ⚠ 912	95KUBC0236AC	15DF2	AD
⚠D918	95KUBDAK180C	RD18ESAB2	AB
⚠D920	95KUDA0064AK	RSF05G1	AB

Ref. No.	Part No.	Description	Code
CONTROL			
⚠R928	95KUFBA501CD	500 ohm Adj.	AC
COILS AND TRANSFORMER			
⚠L902, ⚠ 903	95KUKZ0250ZZ	33µH, Choke Coil	AD
L904	95KUKZ0256ZZ	100µH, Inductance Coil	AC
⚠L906	95KUKZ0259ZZ	Filter	AK
⚠T901	95K129035023	Power Transformer	AW
CAPACITORS			
⚠C901	95KUGFZ104FE	0.1µF, Film	AE
⚠C902	95KUGFZ473FE	0.047µF, Film	AE
⚠C906, ⚠ 907, ⚠ 931, ⚠ 932	95KUGCQ222AB	2200pF, Ceramic	AD
⚠C908	95KUGAQ330KN	33µF, 400V, Electrolytic	AA
⚠C909	95KUGFQ103FB	0.01µF, 400V, Film	AC
⚠C910, ⚠ 933	95KUGCU101AJ	100pF, 1kV, Ceramic	AC
⚠C912	95KUGFF103BQ	0.01µF, Film	AB
⚠C913	95KUGAC470HN	47µF, 16V, Electrolytic	AB
⚠C914	95KUGFF102BQ	1000pF, Film	AB
⚠C915	95KUGCF102BX	1000pF, Ceramic	AA
⚠C916	95KUGFF473BQ	0.047µF, Film	AB
⚠C917	95KUGFF683BQ	0.068µF, Film	AB
C918, 919	95KUGAC271NV	270µF, 16V, Electrolytic	AD
C926	95KUGAB101HN	100µF, 10V, Electrolytic	AB
C927	95KUGFF104BQ	0.1µF, Mylar	AC
C930	95KUGZ0755ZZ	470µF, 10V, Electrolytic	AD
⚠C934, 935	95KUGCZ102BQ	1000pF, 500V, Ceramic	AB
RESISTORS			
⚠R902, ⚠ 934	95KUECC685AE	6.8M ohm, 1/2W, Solid	AB
⚠R903	95KUEFG5R6AA	5.6 ohm, 5W, Oxide Film	AD
⚠R904 | ⚠ 907	95KUEEC563AT	56k ohm, 1/2W, Carbon	AA
⚠R908	95KUEFD273BF	27k ohm, 1W, Oxide Film	AB
⚠R909, ⚠ 912	95KUEFD333BF	33k ohm, 1W, Oxide Film	AB
⚠R913, ⚠ 914	95KUEEC824AT	820k ohm, 1/2W, Carbon	AA
⚠R915	95KUEEB180BF	18 ohm, Carbon	AA
⚠R916	95KUEEC471AT	470 ohm, 1/2W, Carbon	AA
⚠R917	95KUEEC271AT	270 ohm, 1/2W, Carbon	AA
⚠R919, ⚠ 922	95KUEEB472BF	4.7k ohm, Carbon	AA
⚠R920	95KUEEB153BF	15k ohm, Carbon	AA
⚠R921	95KUEEB154BF	150k ohm, Carbon	AA
⚠R923	95KUEEB100BF	10 ohm, Carbon	AA
⚠R924	95KUEEB103BF	10k ohm, Carbon	AA
⚠R925	95KUEEB391BF	390 ohm, Carbon	AA
⚠R926, ⚠ 927	95KUEEB122BF	1.2k ohm, Carbon	AA
⚠R931	95KUEFC8R2AV	8.2 ohm, 1/2W, Metal Oxide	AB
⚠R932	95KUEFCR56AW	0.56 ohm, 1/2W, Metal Oxide	AA
⚠R938	95KUEBBR22AN	0.22 ohm, Fuse Resistor	AC
⚠R939	95KUEEB473BF	47k ohm, Carbon	AA
MISCELLANEOUS			
⚠F901	95KPJCTB2001	Fuse, T2A, 250V	AD
⚠	95KPCZ0112ZZ	Plug, (for AC Cord)	AH
	95KPKZ0449ZZ	Socket, 9 pin (PA)	AD
INFRARED REMOTE CONTROL CIRCUIT (VC-A33BP)			
	RRMCG0798GESA	Infrared Remote Control Unit (VC-A33BP)	AW
TRANSISTOR			
Q3001	92P3SN00059T	2SC4040	AC
INTEGRATED CIRCUIT			
IC3001	92P3SQ00437M	µPD6600GS-556	AQ
DIODE AND FILTER			
D3001	92P3QH00027	SLR-932	AE
D3002, 3003, 3006, 3007	92P3SD00047T	1SS133	AD
CF3001	92P3EF00066	Ceramic Filter, 455kHz	AD
CABINET PARTS			
1	92PFA11H9601	Cabinet-A	AL
2	92PFA11H9701	Cabinet-B	AL
3	92PFA11H9801	Cabinet-C	AE

Ref. No.	Part No.	Description	Code
4	92PFA62D4203	Marking Plate	AK
5	92PFA42C9903	Contact Rubber	AM
6	92PFA5886201	Infrared Filter	AC
7	——	PWB	—
8	92P3ETFD4801	Terminal-C	AC
9	92P3ETFD4701	Terminal-B	AD
10	92P3ETFD4601	Terminal-A	AD
11	92P2A461080	Screw	AA

INFRARED REMOTE CONTROL CIRCUIT (VC-A63BP)

•	RRMCG0827GESA	Infrared Remote Control Unit (VC-A63BP)	BE

TRANSISTORS

Q3001	VS2SB709ABR-1	2SB709AR	AA
	or		
	VS2SA812M5/-1	2SA812M5	AA
Q3002	VS2SD602R//-1	2SD602R	AB
	or		
	VS2SD596DV3-1	2SD596DV3	AC
	or		
	VS2SC2411KQ-1	2SC2411KQ	AC

INTEGRATED CIRCUIT

IC3001	RH-iX1468PAZZ	LR3905X	AQ

DIODE AND CRYSTAL

D3001	RH-PX0142PAZZ	Photodiode, SLR-938C	AC
	or		
	RH-PX0188PAZZ	SID1010CM	AB
X3001	RCRSA0071PAZZ	Crystal, 32.768kHz	AD

FILTER

CF3001	RFiLA0003CEZZ	455kHz	AE

RESISTORS

R3001	VRS-TQ2BD2R2J	2.2 ohm, 1/8W, Metal Oxide	AA
R3003	VRS-TV2AD101J	100 ohm, 1/10W, Metal Oxide	AA
R3004	VRS-TV2AD392J	3.9k ohm, 1/10W, Metal Oxide	AA
R3005	VRS-TV2AD105J	1M ohm, 1/10W, Metal Oxide	AA
R3006	VRS-TV2AD562J	5.6k ohm, 1/10W, Metal Oxide	AA
R3007	VRS-TV2AD104J	100k ohm, 1/10W, Metal Oxide	AA

MISCELLANEOUS

S3001	QSW-P0080PAZZ	SPPB51	AD
	DUNTL0059PAZZ	LCD LF5394G	AL

CABINET PARTS

1	GCABA0309AASA	Cabinet-A	AD
2	GCABB0259AASA	Cabinet-B	AD
3	GCOVH0121PASA	Cabinet-C (Battery Cover)	AB
4	PFiLW0149PASA	Infrared Filter	AB
5	GDORF0056PASA	Door	AE
6	GCOVA0137PASA	Door Cover	AC
7	LHLDZ0079PAZZ	Lock Holder	AA
8	HPNLH1001PASA	Indication Plate	AF
9	QTANZ0291PAZZ	Battery Terminal (+, −)	AA
10	QTANZ0293PAZZ	Battery Terminal (−)	AB
11	QTANZ0292PAZZ	Battery Terminal (+)	AA
12	QCNC-0043PAZZ	Rubber Connector	AB
13	MSPRP0821PASA	Contact Rubber-A	AE
14	MSPRP0822PASA	Contact Rubber-B	AC
15	MSPRP0823PASA	Contact Rubber-C (Inside the door)	AE
16	MSPRP0824PASA	Contact Rubber-D (Inside the door)	AC
17	XYBSD20P05000	Screw	AA
18	XYBSF20P08000	Screw	AA

THE OTHER PARTS

⚠	QACCV2033GEZZ	AC Cord	AN
	QCNW-2702GEZZ	Connecting Cord	AK
	TiNS-1808GEZZ	Operation Manual (VC-A33BP)	AN
	TiNS-1826GEZZ	Operation Manual (VC-A63BP)	AQ
	TMAPC0019GEZZ	Schematic Diagrams (VC-A33BP)	AE
	TMAPC0021GEZZ	Schematic Diagrams (VC-A63BP)	AE

MECHANISM CHASSIS PARTS

Ref. No.	Part No.	Description	Code
1	PGiDS0023GEFW	Retaining Guide	AE
2	MSPRC0142GEFJ	Retaining Guide Spring	AA
3	MLEVC0022GEZZ	Half-Loading Lever	AF
4	MSPRT0270GEFJ	Half-Loading Lever Spring	AA
5	MLEVF0284GEFW	Half-Loading Drive Lever	AC
6	MSPRT0269GEFJ	Half-Loading Reciprocating Spring	AA
7	MLEVF0283GEZZ	Half-Loading Reciprocating Lever	AB
8	MSPRC0144GEFJ	Azimuth Spring	AA
9	RHEDU0070GEZZ	Audio/Control Head Ass'y	AS
10	PCAPS1015GEZZ	Retaining Guide Cap	AA
11	QPWBF3777GEZZ	Audio/Control Head PWB	AB
12	MLEVF0292GEZZ	Audio/Control Head Arm	AD
13	MSPRD0087GEFJ	Audio/Control Head Arm Spring	AA
14	LHLDZ1606GEZZ	Loading Block Holder Ass'y	AC
15	QPRBF3817GEZZ	Loading Block PWB	AD
16	RMOTM1049GEZZ	Loading Motor	AM
17	QPLGN0580GEZZ	Plug, 5 pin (MG)	AB
18	QSW-R0026GEZZ	Cam Switch	AE
19	NGERW1032GEZZ	Worm Wheel	AC
20	NPLYV0133GEZZ	Loading Motor Pulley	AC
21	NBLTK0058GE00	Loading Belt	AA
22	NGERW1031GEZZ	Worm Ass'y	AC
23	NSFTG0045GEFJ	Worm Shaft	AB
24	NGERH1129GEZZ	Master Cam	AC
25	MLEVF0281GEZZ	Pinch Roller Lever Ass'y	AN
26	MLEVF0348GEZZ	Relay Shifter Lever	AD
27	MLEVC0033GEZZ	Reverse Guide	AG
28	MSPRD0086GEFJ	Reverse Guide Spring	AA
29	RMOTN2038GEZZ	Capstan D.D. Motor	AZ
30	MLEVP0136GEZZ	Slow Brake Lever	AA
31	MSPRT0329GEFJ	Slow Brake Spring	AA
32	MSPRC0151GEFJ	Reverse Guide Spring	AA
33	MLEVF0350GEZZ	Relay Gear Drive Lever	AF
34	MSLiF0043GEZZ	Brake Shifter	AK
35	NSFTZ0068GEFD	Brake Lock Shaft	AC
36	MSPRC0143GEFJ	Absorber Plate Spring	AB
37	MSPRT0274GEFJ	Video Search Spring	AB
38	MLEVP0181GEZZ	Video Search Brake Lever	AA
39	MLEVP0131GEZZ	Video Search Reciprocating Lever	AC
40	RPLU-0083GEZZ	Brake Solenoid Ass'y	AF
41	NDAiV1046GEZZ	Take-Up Reel Disk Ass'y	AG
42	NGERH1128GEZZ	Idler Gear Ass'y	AN
43	NPLYV0134GEZZ	Reel Pulley	AC
44	MSPRD0085GEFJ	Shifter Spring	AB
45	PCOVP1018GEZZ	Shifter Spring Cover	AC
46	LHLDP1092GEZZ	Cassette LED Holder	AE
47	RH-PX0180GEZZ	Cassette LED	AD
48	QPWBF2977GEZZ	Reel Sensor PWB	AK
49	RH-PX0181GEZZ	Reel Sensor	AE
50	LCHSS0016GEZZ	Reel Block Chassis	AL
51	MLEVP0134GEZZ	Tension Adjusting Lever	AC
52	MLEVP0195GEZZ	Tension Release Lever	AC
53	MLEVP0132GEZZ	Back Tension Lever	AC
54	MSPRT0273GEFJ	Back tension lever spring	AB
55	NDAiV1047GEZZ	Supply Reel Disk Ass'y	AH
56	MSPRT0272GEFJ	Main Brake Spring	AC
57	MLEVP0135GEZZ	Intermediate Lever	AC
58	MLEVP0129GEZZ	Main Take-Up Brake Lever	AE
59	MLEVP0128GEZZ	Main Supply Brake Lever	AE
60	NGERH1121GEZZ	Loading Relay Gear	AA
61	MSPRT0271GEFJ	Loading Reciprocating Spring	AA
62	NGERH1120GEZZ	Take-Up Loading Gear	AA
63	MLEVF0304GEZZ	Take-Up Loading Arm Ass'y	AC
64	NGERH1119GEZZ	Supply Loading Gear	AA
65	MLEVF0303GEZZ	Supply Loading Arm Ass'y	AC
66	LCHSM0123GEZZ	Main Chassis Ass'y	AT
67	LBNDK1002GEZZ	Tension Band Ass'y	AD
68	LHLDZ1607GEZZ	Tension Spring Hook Plate	AA
69	MSPRT0275GEFJ	Tension Spring	AA
70	MLEVF0291GEZZ	Tension Arm Ass'y	AF
72	MSLiF0049GEFW	Take-Up Pole Base Slider	AB
73	LPOLM0037GEZZ	Take-Up Pole Base Ass'y	AG
74	NROLP0062GEZZ	Guide Roller Ass'y	AE
75	MSLiF0048GEFW	Supply Pole Base Slider	AB
76	LPOLM0036GEZZ	Supply Pole Base Ass'y	AG
77	PGiDM0066GEZZ	Take-Up Loading Rail	AB
78	PGiDM0067GEZZ	Supply Loading Rail	AB
79	NSFTL0563GEFW	Supply Impedance Roller Innor	AC
80	PGiDH0031GEFW	Supply Impedance Roller Flange	AA
81	NROLP0084GEZZ	Supply Impedance Roller	AC
82	RHEDT0026GEZZ	Full Erase Head Ass'y	AK
83	QPWBF2936GEZZ	Full Erase Head PWB	AA
84	LANGA0054GEZZ	Supply Reel Retainer Ass'y	AD
85	NBLTK0059GE00	Reel Belt	AB
86	MLEVP0146GEZZ	Auxiliary Fast-Forward Brake Lever	AE
87	MSPRT0282GEFJ	Auxiliary Fast-Forward Brake Spring	AB
89	DDRMU0002HE39	Upper Drum Ass'y (VC-A33BP)	BB
89	DDRMU0004HE30	Upper Drum Ass'y (VC-A63BP)	BG
90	PGiDC0044GEFW	Drum Base	AK
91	DDRML0012HE01	Lower Drum Ass'y (VC-A33BP)	BB
91	DDRML0012HE00	Low Drum Ass'y (VC-A63BP)	BE
92	QBRSK0025GEZZ	Earth Brush Ass'y	AD
93	RMOTP1107GEZZ	Drum D.D. Motor Ass'y	AW
97	QCNW-6686GEZZ	Full Flat Cable (Capstan D.D. Motor)	AL

Ref. No.	Part No.	Description	Code
98	QCNW-6674GEZZ	Full Flat Cable (Drum D.D. Motor)	AD
99	RDTCH0018GEZZ	Dew Sensor	AG
100	QSOCN0534REZZ	Socket, 5 pin (MF)	AC
101	VRS-TW2ED221J	220 ohm, 1/4W, 5%, Oxide Film	AA
102	VCKYTV1HB102K	0.001µF, 50V, 10%, Ceramic	AA
103	VRS-TV1JD473J	47k ohm, 1/16W, 5%, Oxide Film	AA
105	LANGA0051GEFW	Take-Up Reel Disk Catch Holder	AB
106	PGiDS0027GEZZ	Supply Impedance Roller Flange L	AA
111	LANGF7061GEZZ	Release Pin Angle Ass'y	AC
120	CCHSS0018GE02	Reel Block Ass'y	AZ
123	ZTAPEZ790008E	Rubber Mat	AA
125	QPLGN0378GEZZ	Plug, 3 pin	AB
126	QPLGN0578GEZZ	Plug, 5 pin	AB
127	QCNW-6687GEZZ	Full Erase Head Lead	AC
128	CLEVP0208GE00	AHC Lever Ass'y	AE
129	CLEVP0209GE00	AHC Roller Ass'y	AG
130	RC-KZ0019GEZZ	Capacitor	AA
135	94SSEE0193721A	Drum IC	AU
136	94SSEE0193731A	Capstan IC	AU
137	PSPAZ0315GEZZ	Inertia Moment Plate	AB

CASSETTE HOUSING CONTROL PARTS

	CHLDX3060GE51	Cassette Housing Control Assembly	AY
301	PGiDM0069GE00	Down Guide	AC
302	QSW-F0034GEZZ	Cassette Erase Protection Switch	AC
303	LHLDX1014GE00	Cassette Housing Frame (Right)	AC
304	MARMP0043GE00	Cassette Cover Arm (A)	AA
305	MARMP0044GE00	Cassette Cover Arm (B)	AA
306	NGERW1036GEZZ	Phase Gear	AA
307	MSPRT0290GEFJ	Cassette Cover Arm Reciprocating Spring	AA
308	MSPRD0088GEFJ	Drive Gear Spring (Right)	AA
309	NGERW1034GEZZ	Drive Gear (Right)	AB
310	MSPRT0277GEFJ	Reciprocating Spring	AA
311	NGERW1033GEZZ	Worm Wheel Gear	AB
312	LANGF9355GEFW	Worm Bracket	AB
313	NBRGP0013GEZZ	Bearing	AA
314	MLEVP0142GE00	Open Lever	AA
315	MSPRD0091GEFJ	Open Lever Spring	AA
316	MLEVP0192GEZZ	Switching Lever	AB
317	MSPRT0280GEFJ	Switching Lever Spring	AA
318	NSFTD0016GEFD	Worm Shaft Ass'y	AC
319	MLEVP0140GEZZ	Clutch Lock Lever	AA
320	MSPRT0279GEFJ	Clutch Lock Lever Spring	AA

Ref. No.	Part No.	Description	Code
321	MLEVP0139GEZZ	Clutch Release Lever	AA
322	MSPRD0092GEFJ	Clutch Release Lever Spring	AA
323	MLEVP0138GEZZ	Clutch Lever	AA
324	NPLYV0135GEZZ	Pulley	AA
325	NBLTK0060GE00	Cassette Loading Belt	AB
326	LANGF9354GEFW	Upper Plate	AD
327	LHLDX1011GE00	Slider Holder (Left)	AB
328	MSPRP0135GEFJ	Cassette Spring	AB
329	LANGF9357GEFW	Slider Lock (Left)	AA
330	MSPRT0281GEFJ	Slider Lock Spring	AA
331	MSLiF0044GEFW	Slider	AF
332	MLEVP0137GE00	Lock Release Lever	AA
333	MSPRD0093GEFJ	Lock Release Lever Spring	AA
334	MLEVP0143GE00	Slider Lock Cover	AA
335	LANGF9356GEFW	Slider Lock (Right)	AA
336	LHLDX1010GE00	Slider Holder (Right)	AB
337	NGERW1035GEZZ	Drive Gear (Left)	AB
338	MSPRD0089GEFJ	Drive Gear Spring (Left)	AA
339	LHLDX10115GE00	Cassette Housing Frame (Left)	AC
340	NSFTD0015GEFD	Main Shaft	AD
341	QPWBF2894GEZZ	End Sensor PWB	AB
342	RH-PX0176GEZZ	Phototransistor	AE
343	QPWBF3194GEZZ	Start Sensor PWB	AC
344	QSW-F0040GEZZ	Cassette Switch	AD
345	ZTAPEZ790008E	Rubber Mat	AA
347	QSOCN0595GEZZ	Socket, 5 pin	AB
348	VSDTC124F//-1	Transistor	AC
349	VS2SA937-Q/-1	Transistor	AC
350	VRD-RA2BE153J	15k ohm, 1/8W, 5%, Carbon	AA
351	VRD-RA2BE223J	22k ohm, 1/8W, 5%, Carbon	AA
352	VRD-RA2BE103J	10k ohm, 1/8W, 5%, Carbon	AA
353	VRD-TA2BE472J	4.7k ohm, 1/8W, 5%, Carbon	AA
354	VRD-TA2BE332J	3.3k ohm, 1/8W, 5%, Carbon	AA
355	RC-KZ0028GEZZ	0.047µF, 16V, 20%, Ceramic	AA
356	QCNW-4789GEZZ	Connecting Cord	AF
401	LX-WZ1020GE00	Cut Washer (4.2W-6.0-0.5)	AA
402	LX-HZ304GEFD	Screw (B Tight BTN3P + 6S)	AA
403	NPLYV0137GEZZ	Coupling	AB
404	NPLYV0136GEZZZ	Clutch	AA
405	NGERW1037GEZZ	Worm	AA
406	PSPAZ0301GEZZ	Spacer	AD

SCREWS, NUTS, AND WASHERS

201	XNFSD20-16000	Adjusting Nut	AA
202	XWHSD26-05060	Washer W2.6S-6-0.5	AA

Ref. No.	Part No.	Description	Code
203	XRESJ20-04000	E Ring-2	AA
204	LX-BZ3095GEFD	AC Head Screw	AA
205	XBPSD26P06000	Azimuth Adjusting Screw	AA
206	LX-BZ3096GEFD	Tilt Adjusting Screw	AA
207	XNFSD40-31000	Adjusting Nut (A/C Head)	AB
208	LX-WZ1048GEZZ	Washer W3.1-5.4-0.5	AA
209	LX-WZ1041GE00	Washer W2.6-6-0.5 (LM)	AA
210	XHPSD26P06WS0	Screw C2.6P + 6S	AA
211	XRESJ30-06000	E Ring-3	AA
212	XWHJZ45-02060	Washer W4.5P-6-0.25	AA
213	LX-NZ3046GEFW	Adjusting Nut	AB
215	LX-WZ1003GE00	Washer CW2-5-0.5	AA
216	XRESJ12-03000	E Ring-1.2-T0.3	AA
217	XHPSD26P03000	Screw S2.6P + 3S (S Tight)	AA
218	XHPSD20P03000	Screw S2P + 3S (S Tight)	AA
219	XRESJ25-04000	E Ring-2.5	AA
220	XWHJZ25-05050	Washer W2.6P-5-0.5	AA
221	XWHJZ25-01050	Washer W2.6P-5-0.13	AA
222	XWHJZ25-02050	Washer W2.6P-5-0.25	AA
223	LX-HZ3043GEZZ	Screw W2.6P + 6S	AA
224	LX-BZ3099GEZZ	Screw WSW2P + 11S (W5)	AB
225	LX-XZ3030GEFD	Screw M2x4	AC
226	XHPSD26P08WS0	Screw C2.6P + 8S	AA
227	XJPSD26P08WS0	B Tight Screw C2.6P + 8S	AA
228	XHPSD30P08WS0	Screw C3P + 8S	AA
229	LX-WZ1040GE00	Washer CW2.5-6-0.5	AA
230	XJBSD20P06000	B Tight Screw 2P + 6S	AA
231	LX-BZ3039GEFN	Screw W3P + 9S-Ni	AA
232	LX-HZ3056GEFD	Screw WSW3P + 10S-6W	AA
233	XBPSD30P08J00	Screw SW3P + 8S	AA
234	XBPSD26P12J00	Screw SW2.6P + 12S	AA
235	XBPSD30P05J00	Screw SW3P + 5S	AA
237	XHPSD30P06000	Screw S3P + 6S	AA
238	LX-RZ3001AEZZ	E Ring (Curl)	AA
239	LX-WZ1042GE00	Washer CW2.7-7-0.5	AA
242	XWHJZ25-04050	Washer W2.6P-5-0.4	AA
244	XHPSD30P04WS0	Screw C3P + 4S	AA

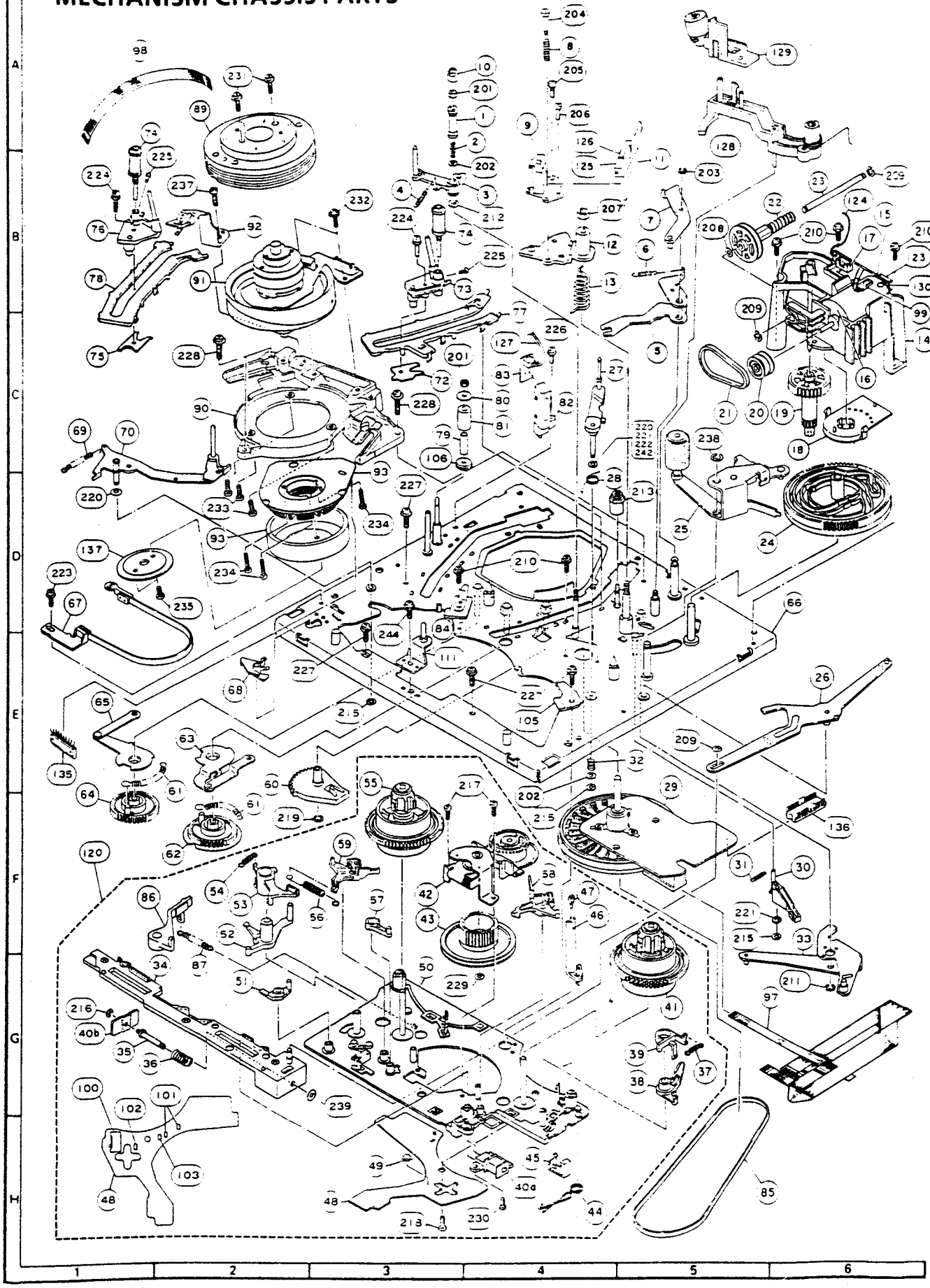
MECHANICAL PARTS

601	GCABB1118GEZZ	Main Frame	AT
602	CCABA3072GE01	Top Cabinet Ass'y	AS
602-1	GCABA3072GEST	Top Cabinet	AR
602-2	TLABS0187GEZZ	Caution Label	AA
602-3	TLABS0229GEZZ	Caution Label	AB
603	GBDYU3075GEZZ	Bottom Plate	AH
604	GCOVA1694GEZZ	Antenna Terminal Cover	AE
605	LHLDP1089GEZZ	LED Holder	AA
606	LHLDZ1780GEZZ	Holder, Power	AC
607	LHLDZ1094GEZZ	Holder, Fluorescent Display Tube	AC
608	LHLDZ1779GEZZ	Holder, RF Converter	AC
609	MHNG-1060GEZZ	Hinge, Main PWB	AA
610	QEARP0360GEFW	Earth Plate	AB
611	TLABM2208GEZZ	Label, Model (VC-A33BP)	AB
611	TLABM2224GEZZ	Label, Model (VC-A63BP)	AB
612	LX-HZ3040GEFF	Screw	AA
613	LX-HZ3047GEFF	Screw	AA
614	XEBSD40P12000	Screw	AA
615	XESSF30P10000	Screw	AA
616	XHPS330P06WS0	Screw	AA
617	XEBSD30P12000	Screw	AA
618	LANGF9367GEFW	Fixing Metal	AB
619	LANGF5060GEFW	Angle	AB
620	LX-HZ3056GEFD	Screw	AA
621	LANGF9538GEFW	Angle	AC

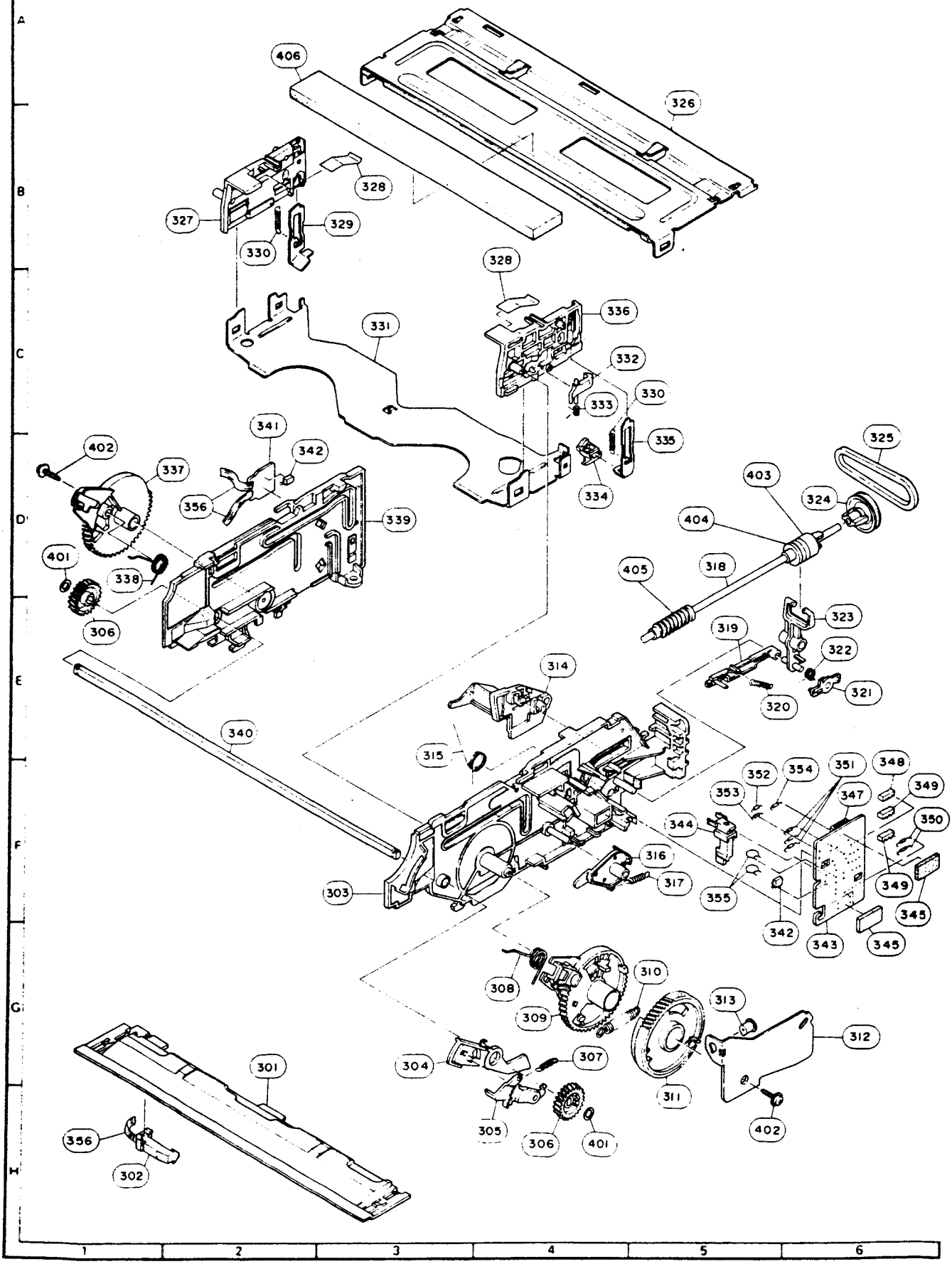
FRONT PANEL PARTS

501	CPNLC1677GE03	Front Panel Ass'y (VC-A33BP)	BA
501	CPNLC1690GE08	Front Panel Ass'y (VC-A63BP)	BA
501-1	CBTN-2501GE01	Operation/Eject Button Ass'y	AE
501-1-1	GCOVA1683GESA	Cover	AC
501-2	CDORF1940GE01	Door Ass'y (VC-A33BP)	AH
501-2	CDORF1957GE01	Door Ass'y (VC-A63BP)	AH
501-2-1	TLABH0490GEZZ	Label (Inside the door)	AB
501-3	HBDGB1007GESB	Badge "SHARP"	AD
501-4	HDECQ0800GESA	Cassette Compartment (VC-A33BP)	AH
501-4	HDECQ0853GESA	Cassette Compartment (VC-A63BP)	AH
501-5	HDECQ0801GESA	Display Cover	AL
501-6	HDECQ0802GESA	Decoration Plate	AL
501-7	HiNDP1820GESA	Indication Plate (VC-A33BP)	AF
501-7	HiNDP1838GESA	Indication Plate (VC-A63BP)	AF
501-9	JBTN-2508GESA	Button	AE
501-10	LANGF9522GEFW	Fixing Metal	AA
501-11	LHLDS1010GEZZ	Door Latch	AA
501-12	MSPRD0123GEFJ	Spring	AA
501-13	PCOVU9200GESB	Fluorescent Display Filter	AF
501-14	QEARP0354GEFW	Earth Plate	AB
501-15	QEARP0355GEFW	Earth Plate	AB
501-16	TLABZ0844GEZZ	Feature Label (VC-A33BP)	AC
501-16	TLABZ0872GEZZ	Feature Label (VC-A63BP)	AD
501-17	XJPSD20P06XS0	Screw	AA

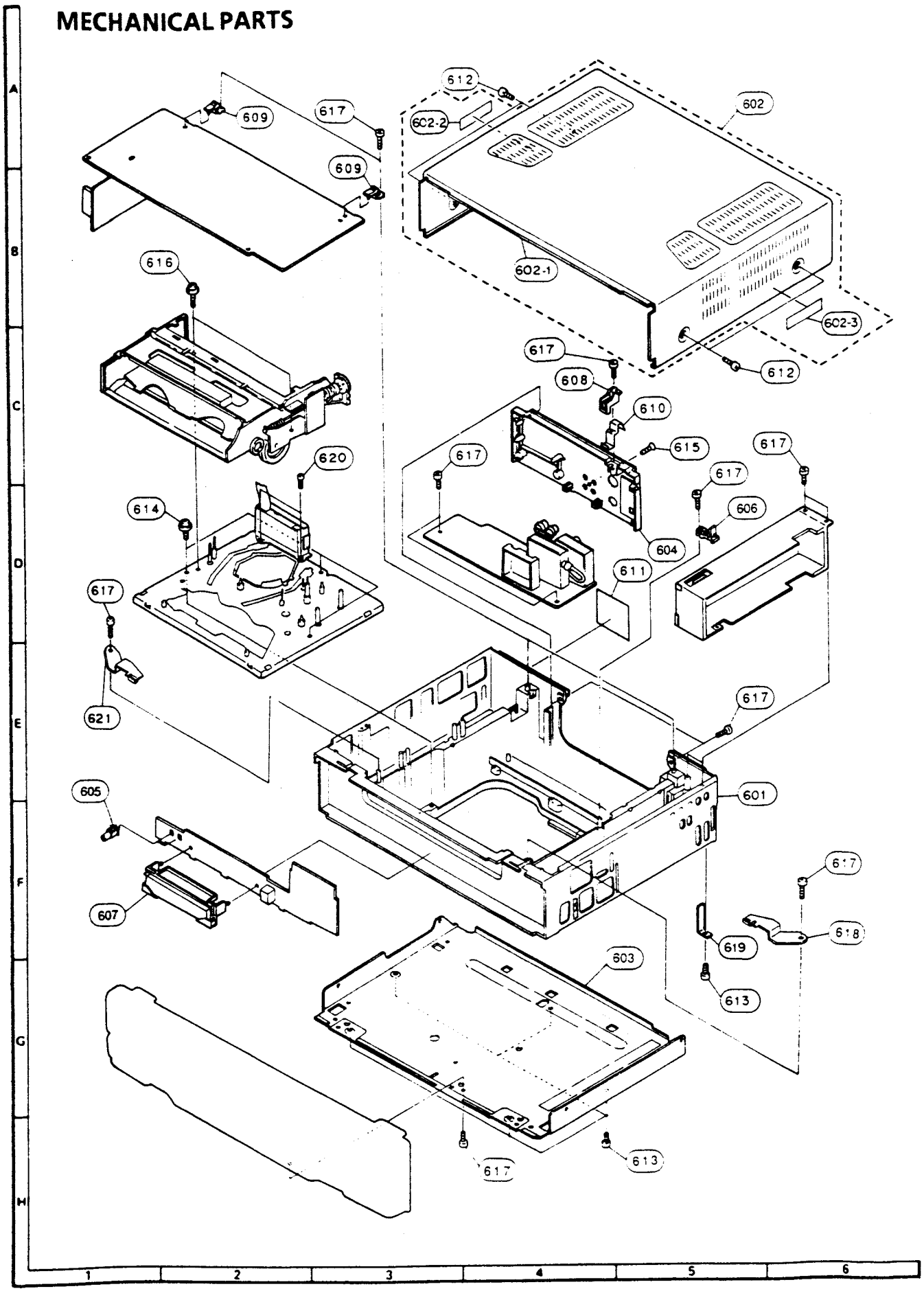
MECHANISM CHASSIS PARTS



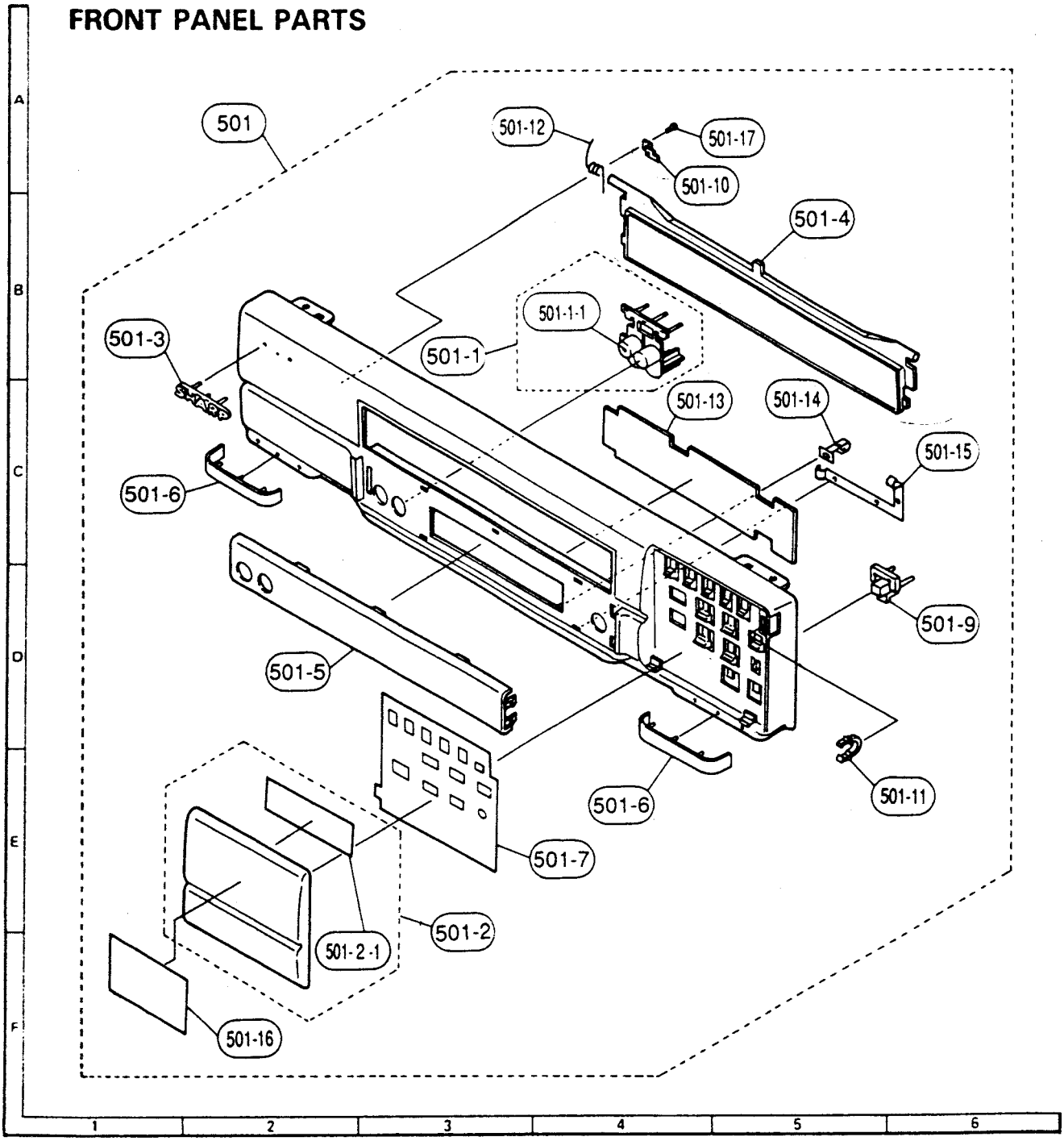
CASSETTE HOUSING CONTROL PARTS



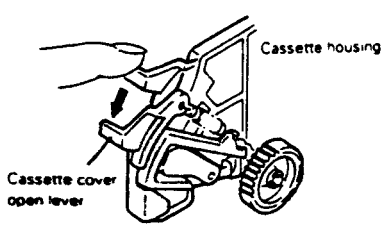
MECHANICAL PARTS



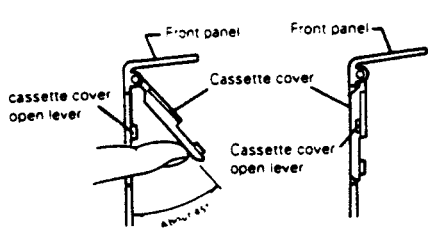
FRONT PANEL PARTS



PRECAUTIONS ON FRONT PANEL SET-UP

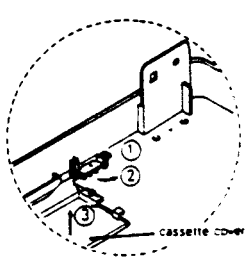


Before attaching the front panel in position make sure that the cassette cover open lever is in its right place (lowermost). If it is out of position, push it down with a finger.



Keep the cassette cover about 45° open and make sure that the cassette cover open lever is between the front panel and the cassette cover. Now fix the front panel in place.

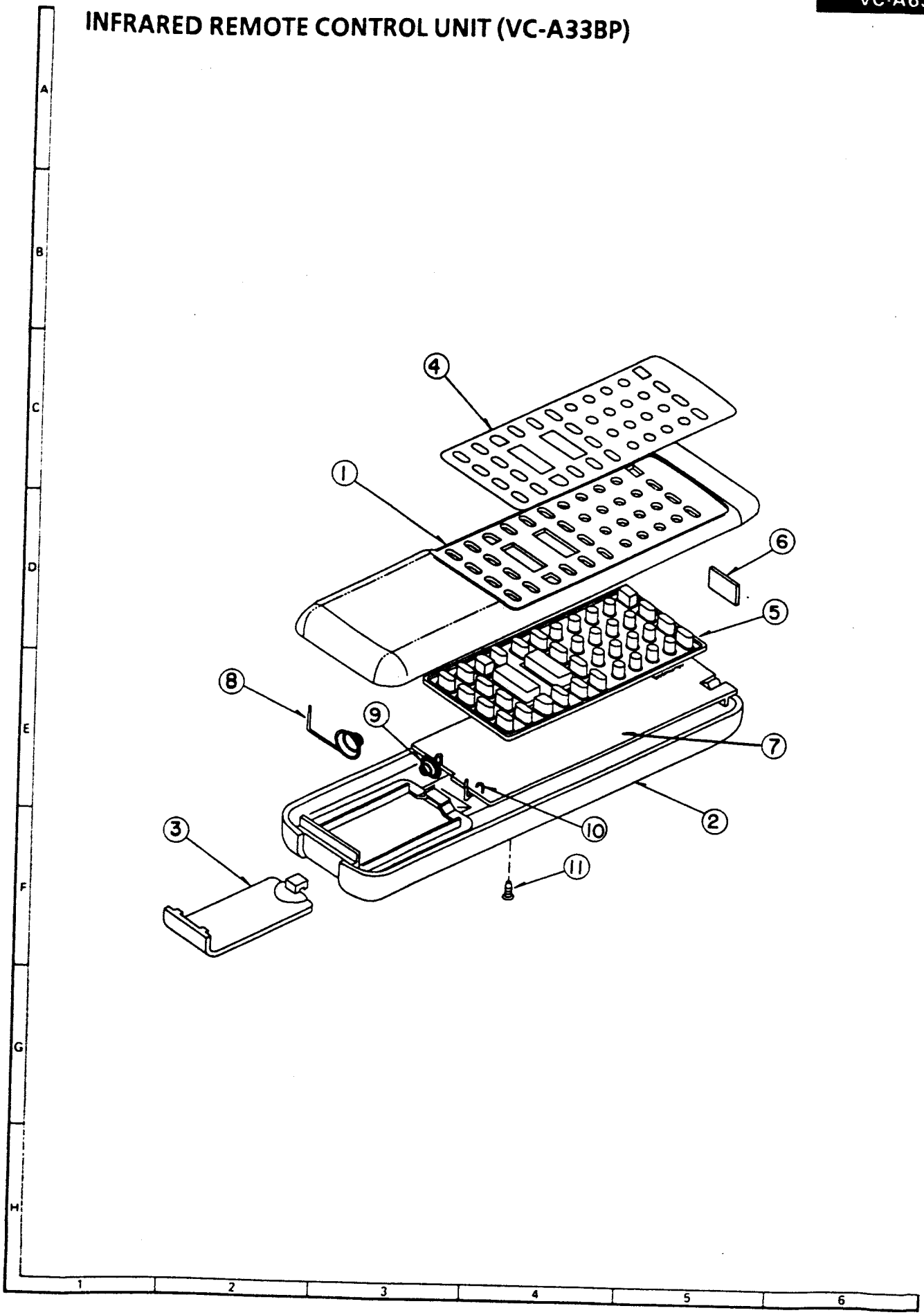
Do not mount the front panel with the cassette cover tilted too open. Otherwise the cassette cover might wrongly run on the cassette housing.



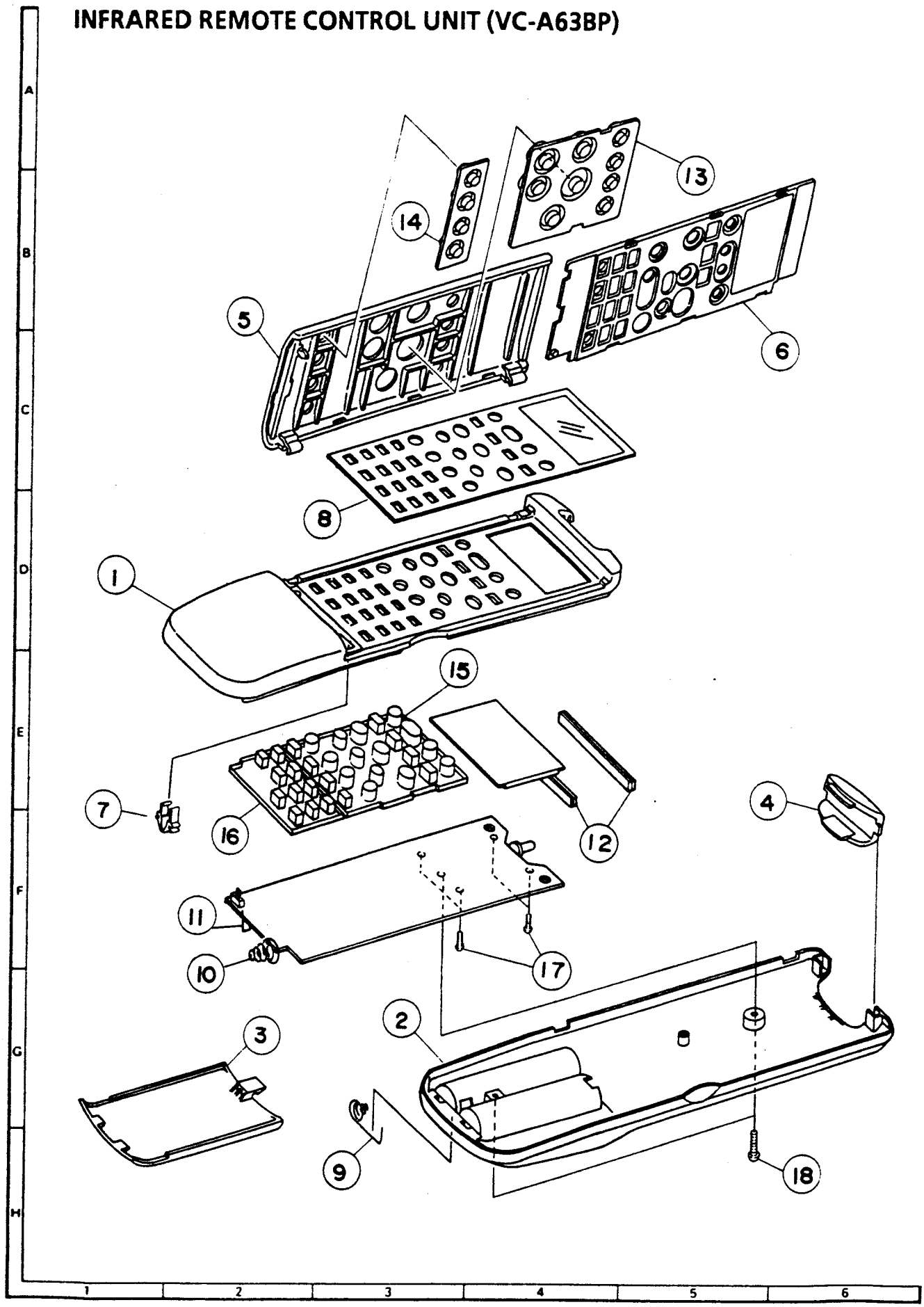
Removing the cassette compartment cover.

1. Loosen the screw ① and turn the fixing metal in the direction of the arrow ②.
2. Lift up the cassette compartment cover in the direction of arrow ③ and remove it from the front panel.

INFRARED REMOTE CONTROL UNIT (VC-A33BP)



INFRARED REMOTE CONTROL UNIT (VC-A63BP)



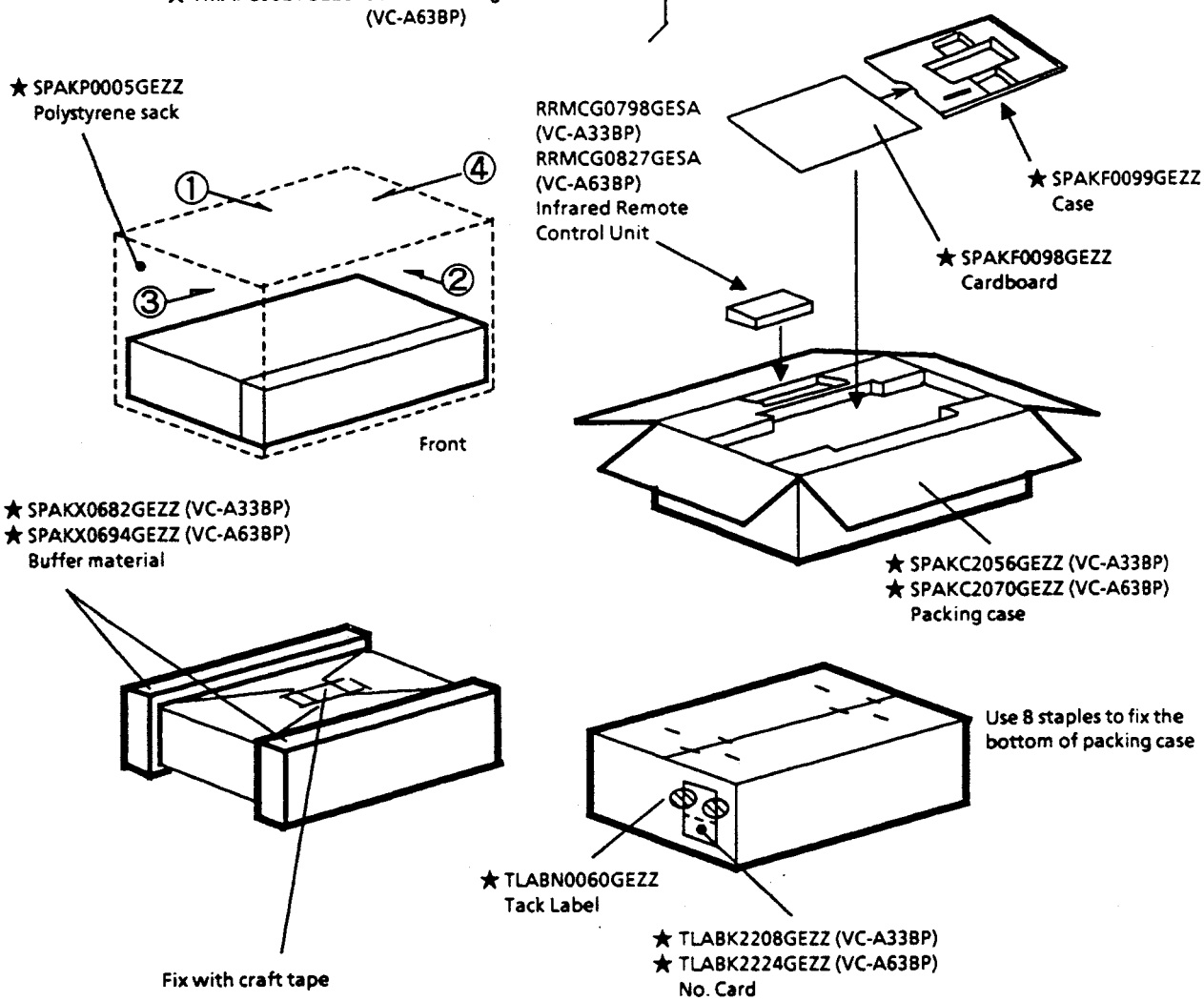
PACKING OF THE SET

■ Setting position of the Knobs

Test signal switch	at "OFF" position	Auto picture	at "ON" position
System selector	at "B/G" position	RF Convertor	at "E36" position

Accessories

★ TiNS-1808GEZZ	Operation Manual (VC-A33BP)
★ TiNS-1826GEZZ	Operation Manual (VC-A63BP)
QACCV2033GEZZ	AC Cord
★ QCNW-2702GEZZ	Antenna cord
★	Dry Battery
★ TMAPC0019GEZZ	Schematic Diagrams (VC-A33BP)
★ TMAPC0021GEZZ	Schematic Diagrams (VC-A63BP)



★ Not Replacement Item